PROCEEDINGS

The 3rd Annual International Seminar On Trends In Science And Science Education 2016

Organized by:

Faculty of Mathematics and Natural Sciences
Medan State University

October 7th, 2016

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AISTSSE 2016

Annual International Seminar on Trends Science and Science Education

Proceedings

The 3rd AISTSSE
Trends in Science and Science Education

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7 October 2016

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Medan State University
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Preface I

Welcome to the 3rd Annual International Seminar on Trends in Science and Science Education 2016. This is the third time we are hosting this seminar and we are proud to inform you that this seminar is an annual event in our calendar and will be held every year since 2014. We are inviting international recognized speakers from several countries to share their latest discoveries to all of us in Biology, Chemistry, Physics, Mathematics and Science Education fields. Well known researchers in science and science education will share their experiences and knowledge so we can have up to date the information. This is one of the goals of this seminar.

As science researcher we realize the importance of information exchange among us. The new information enlighten our mind and give us ideas on what to do next in our research and how to do it. This new informationoften become the basic for our next project in particular, and become the upcoming year research trends in general. Information exchange also keeps us updated, allow us to give and receive suggestions and critics which will lead us to better results. Thus, we need a forum where we can share and exchange information. Seminar, conference and other scientific gathering are media for us to do so.

Wewould like to thanksto all the researchers who responded to our call for papers and participant of this seminar. Let us share information about our latest discoveries in science and science education and set the trends for the upcoming year. Let us collaborate and create new opportunities for a better and more holistic research.

Finally, we convey our thanks to the Rector of State University of Medan, Prof. Dr. SyawalGultom, M.Pd and all the vice rector for the support and attention to this seminar and also to all of the committee members for their work in ensuring the run of this seminar. Once again, welcometo the 3rd Annual International Seminar on Trends in Science and Science Education 2016.

Medan, 7 October 2016

Dr. Asrin Lubis, M.Pd.
DeanFaculty of Mathematics and Natural Sciences
State University of Medan

Preface II

First, let us be thankful to the one and all-powerful God that on this fine morning we are still given bodily and spiritual health and can gather together in this room, on our beloved capital city of North Sumatra, Medan.

A warm and special welcome goes to our keynote speakers, Dr. Mohd. Sazali Khalid (from University Tun Hussein Onn Malaysia), Prof. Dr. Janchai Yingprayoon (Suan Sunandha Rajabhat University, Thailand), Rabeta bt. Mohd. Salleh, Ph.D (University Sains Malaysia), Dee-Jean Ong (R.E.A.L. Education Group Malaysia) and Dr. Anna Ratna Wulan (from Universitas Pendidikan Indonesia).

The special welcome also goes to all invited speakers from top Universities all over Indonesia.

This seminar, The 3rd International Seminar on Trends in Science and Science Education 2016 is an annual seminar organized by Fakultas Matematika dan Ilmu Pengetahuan Alam, Universitas Negeri Medan. This is the third year seminar following the succesful first and second year seminar held in 2014 and 2015. This year seminar is focusing on the contribution of research to the development of technology. The committee expects the information exchange among researchers in this seminar will encourage collaboration among the different actors in science and science education community so as to achieve a better result for the benefit of the community. This third annual international seminar will be held from October 7 – 8, 201.

The committee are really honored to have attention from approximately 200 speakers and participants from three different countries. They come from Thailand, Malaysia and of course Indonesia. About 20 universities from all over Indonesia participate in this event. It is expected that those who participate in the seminar will afterwards be familiar and able to interact with their international counterparts in their scientific area. This is in line with the vision of Universitas Negeri Medan to become a world class and character building university.

The committee recieved more than 100 seminar abstracts and full papers from science education, biology, chemistry, physics, and mathematics sciences. Most of the abstract have been edited and bound into an abstract collection book which is a part of the seminar kit.The seminar full papers are now in editing stage by the committee before publish in seminar proceeding that will be available in both printed and on-line forms, in the next January 2017. Please, remind the committee if you want to get the copy of the seminar proceeding.

This year seminar is a special event because it is held together with the annual meeting of all mathematics and natural science faculties from LPTK in

Indonesia or Forum MIPA LPTK Indonesia. The meeting will be held from October 7-9, 2016, in Medan and Parapat. This forum is intended to built collaboration among LPKT's in Indonesia.

I would like to take this opportunity to acknowledge the important role of the honorable Prof. Dr. Syawal Gultom, M.Pd, rector of Universitas Negeri Medan for giving us his full support and attention and for providing his precious time to be with us and to honour us by opening this seminar.

Our sincere thanks also goes to the honorable Dr. Asrin Lubis, M.Pd, Dean of Fakultas Matematika dan Ilmu Pengetahuan Alam, who havelead and encourage all the committeemembers to be always focused and worked hard even in a very short period of time to prepare the seminar.

My sincere thanks also goes to all members of the committee and to all staff of Fakultas Matematika dan Ilmu Pengetahuan Alam for their continuous support and hard work because without their assistance this seminar may not have taken place today.

Finally, I conclude my speech by kindly inviting Honourable Prof. Dr. Syawal Gultom, M.Pd, Rector of Universitas Negeri Medan, to give special direction and officially open the seminar.We wish you good luck and success in this endeavor.

Thank you very much

Prof. Dr. Herbert Sipahutar, MS., M.Sc.
Chairman AISTSSE 2016

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Description of the Implementation Supervision of Learning Science at Elementary School in Gorontalo Province

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ABSTRACT: The purpose of this research is as a preliminary study for gathering information about teaching supervision as a professional service for teachers which is conducted by supervisors for developing professional teachers. Data in this research were gathered and collected through observation and interview. That data is roles of supervisors in providing assistance and guidance and also obstacle faced by teachers and supervisors in science teaching implementation also supervision. Subject of this research are teachers who teach science in elementary school of 6 regencies and cities in entire of Gorontalo province. 15 science teachersfrom elementry school are choosen as samples. Samples were choosen using purposive sampling technique. Based on observation of the teaching process in class, all respondents have already implemented preliminary activities such as prepare the student, apperception, explain Basic compentencies and objectives, main activities consist of exploration, elaboration, confirmation and closing. Implementation of science teaching supervision have been done by supervisor and headmaster but still has not met the frequency as required in minimum service standard of primary education because has not met the criteria of twice a month and 3 hours in each visitation.

KEYWORDS: Supervision, Science Teaching

1. INTRODUCTION

Teaching supervision in the school system of Indonesia is still limited to physical and formal administration aspects such as teacher's attendance, making teaching program, the frequency of laboratory usage while teaching performance still get less attention [1]. Supervision is intended to provide services to principals in order to manage the institution effectively and efficiently and to develop institutional quality of education [2]. As the learning supervision, Reference [3] express that supervision is to improve the quality of learning students. Supervision is done for 1 reason, that is to rectify teaching and learning, supervision also becoming profesional service and assist for teachers with all forms of effort to help,encourage and as a chance for the teachers to improve their profesionality thus they will be able to run well their main job. Along with that, Reference [4] explain that main function of supervision is help teachers to get self-direction and learn about how to save their problems imaginatively and creatively.

Current trend of supervision is focus only in one technique that is class visit- supervision only to observe whether teaching procees have already appropiate with teaching plan or not, without assisting content-knowledge and further study about content which is difficult to be taugh to the student and also the correlation within lesson content and the truth of education itself. Reality show that learning process especially science is less attractive thus make student feel saturated and has less interest with the learning process. Beside that, because of the atmosphere of classroom that tend to be passive,just few student who want to ask question to the teacher even though they all have not understand the content that have been thaught yet.

This condition will bring an impact on failure of science teaching purposes. Teaching supervision is a series of efforts to provide profesional service assistance for teacher by supervisor (school supervisors, principals and other supervisors) to improve the quality of teaching and learning results [5]. Thus, teaching supervisor has to learn continously, update their information and develop creative ideas about teaching and then be able to transmitte it to the teachers. So, teacher's domination in learning process especially in science subject can be diminished.

Based on description above, main focus of this research are identification (1) science teaching implementation by teacher; (2) science teaching supervision that have been implemented; (3) problems faced by both teachers and supervisors in order to improve the quality of science learning in school.

2. METHOD

This research is using descriptive research method. Data in this research were gathered and collected through observation and interview. Subject of this research are teachers who teach science in elementary school and junior high school of all regencies and cities in entire of Gorontalo province. The population of this research are science teachers in elementary school and junior high school which is spread over 6 regencies/city in Gorontalo Province. 15 science teachers either from elementary school or junior high school are choosen as samples from each regencies and city. Samples were choosen using purposive sampling technique.

Aspects that become indicator for targeted research's subject related with resources of science teaching supervision program in elementary and junior high scholl in Gorontalo is focuses on 3 aspects : (A) knowledgement aspect of science teaching supervision concept which are consists of (1) science teacher's knowledgement about science teaching supervision, (2) supervisor's knowledgment about science teaching supervision and (3) principal's knowledgement about science teaching supervision. (B) aspect of implementation of science teaching supervision,consists of (1) implementation of science teaching supervision by supervisor, (2) implementation of science teaching supervision by principal, (3) perception of science teacher about the supervision, (4) supervisor's effort in order to improve his competence, (5) principal's effort for improving his competence and (C) Science teacher's performance.

Data in this research were analyzed using descriptive-qualitative. Beside that qualitative data was being analyzed using tematic analysis by comparing data from each step and then being concluded. Analysis flow in this thematic analysis is divided into data collecting, data presentation, data reduction and verified conclusion.

3. RESULTS AND DISCUSSIONS

Knowledgement of Science Teaching Supervision

Science Teacher's Knowledgement

Science teacher's knowledgment about concept of science teaching supervision in elementary and highschool in regencies and city in Gorontalo is that assistance of science teacher was done by workshop which is started with school supervision through teacher organization (IGS). About science teacher's knowledgment of comprehensive science learning concept,show that science learning process was dine contextually,moreover, teachers explain that the essence of teaching science at school in order to understand nature phenomenas and realize god's authority and also foster a love of the creator in order to establish student's character.

Relevance with the teacher assistance process in design science lesson by supervisor, all teachers said that they have already gotten comprehensive and one by one assistance, from making teaching instrument, substance, learning model and evaluation by supervisor. Meanwhile, they also said that teacher also get assistance how to use existing lesson source that fit the characteristic of teaching material and so do the learning media. The process of assisting teacher in order to elaborate learning interaction have been done by supervisor after perform supervision in class base on answer from the teacher. As well as for streightening 8 teaching basic skill. Another information that have been gathered from teacher is teacher assisting in term of developing inovatif and fun science learning.

Supervisor's Knowledgment

Supervisor's knowledgment about science teaching supervision in elementary and junior highschool of elementary and juniorhigh school in regencies and city of Gorontalo Province is that supervision was done using administration supervision technique, process supervision and clinical supervision,others said that they only used clinical supervision technique. For teaching supervision they use academic supervision technique such as class visitation and give feedback.

Teacher coaching was performanced individually and in group depend on the case. Furthermore, based on a year before analysis result, program which is appropiate with the goals was established. Implementation of supervision in elementary and junior high school should be done with the principal knowing so it can support the improvement effort of teaching by teacher in class. Furthermore, after supervision in class,a meeting was held for gathering opinion from teacher about weakness of teaching then followed by explaining output of supervision. According to supervisors, the appropiate method for Scince teaching supervision are using humanistic approachment, competency approachment and clinical approachment also class visiting technique. This is mean that concept of teaching supervision of science learning in regencies and city of Gorontalo Province have been done using clinical supervision technique.

According to supervisors, regulation that underlying teaching supervision are regulation of the minister of national education number 12/2007 about scholl supervision standard, regulation of the minister of national education number 22 about content standard for primary and secondary education and number 23/2006 about graduate competence standard for primary and secondary education, number 41/2007 about standard process and technical instruction from BSNP and directorat also decree from head of education department.

As for making an appropiate science learning plan,it have been done in accordance with substance characteristic and learning support tools, basic competence and standard process, science learning scenario forming using inovatif learning model,

exploration,elaboration according to substance characteristic while media usage in science learning was used base on teacher's creativity and inovation, using tools from nature and others media such as LCD, science kit depend on the situation of the school. The use of learning source is always focused on environment use and learning substance. All supervisors state that classroom action research is a solution for improving scinece teaching in class adjusted with problem that was faced in class. As for,collaboration with other stakeholders in order to improve self-quality as supervisor was done by enrolling supervisor's discussion forum (MPKS), training while involvement of supervisor in supervisor association,all supervisors state that they have not been involving yet. There is an Association for all Indonesian teacher in Gorontalo (APSI) but this association is still passive. Based on data above, at technique level, supervisors are already have an understanding about science teaching supervision concept such as school visitation and class visitation to observe how is teacher teach in class, their teaching program and giving feedback while at the concept and theoritical level,thay have not yet already understand so that the supervision essence as a proffesional effort for helping teacher to become a professional teacher still not perceptible.

Principal's Knowledgment

Science teaching supervision in regencies and city of Gorontalo accoding to the principals, are already compatible with technical instruction, regulation of minister of national education number 41/27 about standard process and also letters from education department. While learning concept of scinece in elementary and junior highschool are done using contextually intergreted-science concept, the essential of learning science in elementary and junior higj school aro to understanding nature essence and the creator, more applicative and build student's character in order to knowing the nature and its creator. The principals also express school's vision and mission to develope faithfull studentand also have an ability to compete globally and mastering scinece & technology and faith & fear of god.

Information technology usage for supporting learning process at school also being stated by principal but still not using optimally. Principals express the way to motivated teachers to reflect the result they already reach by performance appraisal and coaching. Based on data above, at technique level, supervisors are already have an understanding about science teaching supervision concept such as school visitation and class visitation to observe how is teacher teach in class, their teaching program and giving feedback while at the concept and theoritical level, they have not yet already understand so that the supervision essence as a proffesional effort for helping teacher to become a professional teacher still not perceptible.

Implementation of Science Teaching Supervision Program

Implementation of science teaching supervision program by Supervisor

The data on result of process evaluation on implementation of science teaching supervision program as follows, according to supervisors, class visitations were conducted twice in one semester for each teacher, other answer from other supervisor was three times in one semester which including training, controlling and marking. This results showed that there were variations on class visitation conducted by the supervisors.

In training process, the supervisor conducted the initial training in group, then individual training followed by clinical collaboration. Private training were conducted for three times if the tools provided by the teacher have not met the requirements thus further training was needed. Other Supervisor stated that private training was depending on competencies achievement, if the requirements were still not met then further training was needed to be conducted. In the preparation of syllabus, all supervisors stated that their responsibilities as the science teachers' companions were depend on the analysis result. The syllabus may not be as same as the syllabus from Central Unit or from the previous teacher, then they have responsibility to check wether the syllabus were met the requirements or not.

The supervisors also advise teachers in choosing and using science studying methods/strategies by adapting with the material characteristics, teacher readiness and supporting facilities and meet the requirements. Moreover, the supervisors have also responsible as mentor and companion in preparation of RPP from introductory to conclusion part by learning and checking the shortcomings and doing review, thus the teacher would know the shortcomings in their RPP.

In studying science at class, all the supervisors stated that every teacher has gotten training based on the result of previous supervision on the teacher, the training was conducted minimum twice in one semester, training started from the beginning of studying process then the sipervisors would identify the shortcomings and disadvantegs in studying process as the basis for the next training. After that, the supervisors also stated that they have conducted the training on how to use the learning tools on the time that the RPP was prepares, the training also has focused on teachers who have not abilities or experiences in using the tools, then followed by special training on how to use the tool and science kits.

Training on science teachers on using the information technology (IT) has focused on the science teachers who have not abilities on using it. They have been encouraged to attend any workshop on their educational units. On the other hand, the supervisors also did training on evaluation aspects from the beginning of the learning process. Based on that information, teachers should have been ready to conduct the studying process as requested and evaluated by the supervisors.

This training used to be based on the result of previous year's supervision. The supervisors used to participate on the teachers meeting at school relating to teacher competencies or evaluation of studying programs. The inter-school visitation has also been done, such as lesson study or inter-class visitation in one school.

However, the class action research has not fully implemented. Based on that data, the supervisors have conducted science studying supervisions in order to meet the requirements of the visitation frequencies set by every local district education departments in Gorontalo which was 2 or 3 times in one semester, thus the training on science teachers continuously and simultaneously or meeting the minimum requirements which were twice in a month and 3 hours in every er visitation still could not be seen clearly. In district of Pohuwato, the result of interviews with the supervisors and the head of local district education departments found that other than 3 times supervision visitations, there were inter-district cross supervisions in district of Pohuwato.

Implementation of science studying supervision by the school principal

All the school principal stated that class visitations have been conducted by them twice for each semester whereas one time has been done internally and one time has been done with supervisors from the local district education departments.

Besides, class visitations have been conducted every day to see the process and the result of studying. In teacher training process, private training related to the supervision has been conducted twice for each semester in the beginning of the studying activity and before the integrated supervisions. Moreover, additional integrated meeting has also been done related to the result of supervisions. Other school principals stated that the private training has been adapted with the needs mainly to give guidance on class studying.

Teachers meeting have been counducted routinely 3 times on each semester in the beginning, middle and at the end of the semester. Besides, the meeting has also depended on the need of informations that must be delivered. Other school principals also stated that in one month there were 3 times meeting in average depend on the urgencies that need to be discussed and some also stated that the routine meeting also conducted one time every month in order to evaluate the studying activities.

On the visitations to other school by the school principals with the science teachers, they stated that it was scheduled on MGMP/KKG/KKG, the school principals would only be given the report on the visitation to certain school. Some school principals stated that there were no visitations while some stated that there were no routine and scheduled visitations.

Related to teacher training using the class visitation technique, the school principals stated that there was training to motivate the teachers to improve the quality of the class studying while other school principals said that the visitations have been done mainly class visitations while some principals said that there were no class visitation except for the science teachers.

The role of the principals in science teachers working group as programmed in MGMP/KKG was to give guidance and information about the studying activities.

Other principals said that they were involved in giving guidance to IGS group mainly to finish the studying achivement contextual analysis. Training for inexperience teachers has been conducted routinely by involving the vice principal in curriculum together with the subject supervisors while some principals said that the training was conducted by appointing the senior teacher to control, to train, to evaluate and to give suggestion to the inexperience teachers.

Besides, the principals have their roles to train the superior teachers by using special approach based on the background issues. Then the principals would give suggestions, directions, and instructions.

Other principals said that in order to train the superior teachers, they made them as their partner and gave guidance according to their thoughts thus it would be easier to communicate with them.

According to the principals, for the less diligent teachers, the trainings were conducted continuously based on the issues faced by the teachers and the persuasive approach was also used in this case. Besides, the principals also gave them motivation and to improve their potential, the teachers had been given additional task out of their teaching hours. All principals said that for the marking of teacher performances were based on instruments which have not available yet in the school. Those instruments were on the supervisors.

According to above mentioned data, the principals have done science teaching supervisions limited only to monitor the studying process in the class and have not conducted science teacher training simultaneously and continuously or based on standard requirements of minimun services which is twice a month and every visitation must be conducted for 3 hours.

Science teachers perception on science studying supervisions

Some teachers stated that there were one class visitation, some stated 2 and even three times visitation in one semester, while supervisions by the principals have been conducted every day.

Some teachers stated that there were one or two times private training in one semester while other stated that there were no private training except group training.

Training was more focused on administrative aspects of studying and concept of science itself. Related to the comprehensive science concept, the science teachers stated that the science studying concept were implemented in contextual way moreover the teachers said that essences of science studying in senior high school is to understand the natural phenomenon, to recognize the power of the God and to foster the likeliness to the God in order to build the student characteristics.

In relation of supervision on syllabus preparation, the science teachers stated that the supervisors trained the teachers directly at the beginning of the semester, to prepare RPP based on syllabus, to determine indicators based on standard of competencies and basic competencies, to determine the learning methods, to train and to develop the tools for learning based on the school environment evenmore there are school that used the ICT in studying.

Supervisors have also introduced PAKEM (active, creative, effective and enjoyable) studying. After that the supervisors had monitored the learning process from the beginning to the end of the class that continued with reflections of the findings during the studying process.

According to science teachers, training from supervisor to use the information technology were varies. Some supervisors introduced the IT and some were not such as making of power point presentation, using LCD or downloading the source of study even though some schools have no IT facilities. Besides, supervisors were also involved in teacher meeting especially the school supervisors and other teachers stated that supervisors were involved in teacher meeting if the meeting related to the studying or other supervision activities which used to be done at the beginning of the semester and the supervisors were also involved in accompanying on MGMP/KKG forum. The changes of curriculum implementation from KTSP to 2013 curriculum was the obstacle in MGMP/KKG. There were some teachers and supervisors that have not attended the training on K-13 while their schools have started to implement this, thus in preparing the RPP and implementing the K-13 there were some teachers and supervisors that still confuse.

All teachers stated that training on preparation of the studying material have been conducted by the supervisors while training on class action research were still rare which was from 80 respondents only 20 respondents that have been trained. This was also the case for training of scientific research including tehre were no efforts to publish innovative science studying research on scientific bulletin.

Based on above explanation, the teachers perception on science studying implementation were that the supervisors were not optimal in doing so thus there were some teachers that need improvement of their professional competencies which reflected in ineffective performances of the teachers.

Supervisor's effort in order to improve his competence

All supervisors express that they already took part as participant of training,seminar also workshop, collected information from teacher whose enrol some activity which is compatible with their main duties and function, did coordination with their feloows in supervisors discussion forum, using IT such as internet for gathereing information related with supervision activity.

Supervisor's involvement in supervisor's association, all supervisors state that there is no supervisor's associate in regency/city level, while coordination between supervisor amd LPMP,supervisors express that they just did individual coordination especially related with supervision quality and others state that they just share information with LPMP. Data above show that supervisors already done some efforts to improve their competency.

Principal's effort for improving his competence

Principal's effort for improving gis competency are understanding the making of school planning,empowering school resources optimally,school development towards an effective education organization, creating conducive,inovative climate and culture for learning,managing teachers and staffs in order to empowering human resources optimally, managing facilities and infrastructures for optimal empowering, managing relation between school and society in order to find source for learning activity, developing student's capacity, developing curriculum and learning activity that appropiate with national education.

Based on description above, principals already done some efforts to improve their competency in accordance with regulation of minister of education number 13/2007 about standard of principal.

4. CONCLUSION

Implementation of science teaching supervision have been done by supervisor and headmaster but still has not met the frequency as required in minimum service standard of primary education because has not met the criteria of twice a month and 3 hours in each visitation.

Some constraints that have encountered are there are some science teachers that do not willing to be supervised with many reasons such as unprepared learning media and not all supervisors and teachers have already enrolled in curriculm 2013 training so that they still confuse about how to implemented curriculum 2013 in science learning and also there are some supervision that perform by non-science supervisors thus the supervision can not be perform optimally.

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REFERENCES

[1] Paramata, Yoseph, "Sosialisasi Inovasi dan Supervisi Pembelajaran IPA (Studi Kualitatif pada SLTP se Kota Gorontalo), Universitas Negeri Gorontalo,"Dr. Disertasi, Program Pascasarjana Universitas Pendidikan Indonesia, Bandung, Inodnesia, 2001.

[2] Dean, Winchester (2010), Supervisi Pendidikan, [online]. Tersedia: http://id.shvoong.com/ social-sciences/education/2025208-pengertian-supervisi-pendidikan/

[3] Hoffman, K.M. and Stage, E. K, "The Challenge of Higher Standards. Science for All: Getting It Right For the 21st Century,"*Journal of Curriculum and Supervision*. Vol 50 (5), 1993.[Online],Available: http:// www.ascd.org/reading room/edlead/ 9302/ toc. html

[4] Satori, Dj, "Pengembangan Model Supervisi Sekolah Dasar (Penelitian terhadap Efektivitas Sistem Pelayanan/Bantuan profesional bagi Guru-guru Sekolah Dasar di Cianjur Jawa Barat),"Dr. Disertasi. Fakultas Pasca Sarjana IKIP Bandung, Bandung, Indonesia, 1989.

[5] Ross, J. A., Regan, E. M. "When I was Successful They Made It Seem Like Luck": District Consultants' Responses to Feeback from Principals and Others. *Journal of Curriculum and Supervision*. Vol 10 (2).1995 [Online]. Available: http://chatserver. ascd.org/cgi-shl/asweb.exe?jcs+D+409 06.