The Stresses of First Year Science Teachers

An Honors Thesis (HONRS 499)

by

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ABSTRACT

Although educators spend four years of their lives preparing for the role of a teacher, it is an obvious fact that not everything can be taught in the college classroom. To determine some of the trouble areas faced by beginning science teachers, a questionnaire was sent to all Indiana high school science departments. This survey resulted in some interesting information in nine different areas that may cause stress for first year teachers. Much advice was given by experienced teachers to help prepare anyone who may read the results.

INTRODUCTION

After four years of difficult classes, labs and preparation, a graduate may feel confident and knowledgeable enough to conquer the world of science teaching in a single bound, but not in my case. I feel that I have successfully completed my college requirements and learned plenty of science, but when I first stepped into a classroom and experienced the realities of working with high school students I felt very inadequate.

When discussing these feelings with other teachers, I soon began to realize the vast array of difficulties beginning teachers are bombarded with that no one ever discusses in the college classroom. I began to hypothesize that there are many things that can only be learned by experience. I also realized colleges need to update their programs to discuss important, practical areas that never seem to get mentioned. I had many questions to be answered and realized quickly that the best people to answer my questions would be the people who have had to deal with the same questions themselves, other science teachers. I decided to choose eight areas of concern and write up a survey to have all Indiana science teachers rate on a scale of 1 - 5 how much stress these areas caused them as first year science teachers. A rating of one meant very little stress whereas a rating of five meant a high
anxiety level. I also asked the teachers to write any comments, advice, or suggestions they might have to better prepare first year science teachers for the real world. Thus developed the basic foundation for my senior thesis.

As a result of this survey, I found many Indiana high school teachers felt inadequate, apprehensive and a good amount of stress their first few years of teaching. Many of their comments and suggestions are very helpful and worthy of notice. There were also several other areas of concern mentioned other than the eight I had the teachers rate. A copy of these results will be sent to those who requested them as well as being discussed in further detail in this paper.

**METHODS**

As I have already stated, to obtain information I decided to send out a state wide survey to all high school science teachers. The primary goal of this survey was to have teachers rate the amount of stress they experienced as first year teachers and discuss the areas that caused them this stress. I asked teachers to write any advice or suggestions that would be beneficial for a first year science teacher to hear.

The format of the survey was simple to understand and fill out. I chose eight areas, listed them one at a time, typed the numbers one through five beside every word, and left adequate space for the teachers to write. A copy of the survey and the cover letter can be found in the appendix.

There are 403 high schools in Indiana that received a copy of this letter and survey. I felt this would be an adequate number of schools to give valid results. I obtained a list of all the schools from the Ball State University Admissions Office which was very helpful.
I had no idea how many science teachers each high school has, therefore I sent one copy to the department head and requested they copy and distribute the letter to their science colleagues. I included a return envelope with postage already paid to help increase the number of surveys returned.

The letter had to be reviewed by the Ball State Institutional Review board before I sent it out to insure no rights would be violated and no emotional harm done. This was not a problem and my survey was approved with no changes.

I asked for the survey to be returned within two weeks of the time they were sent out. A majority of the letters were returned within this time span, but I allowed an extra week or so to make sure I received all of them.

RESULTS

Because I had no way of knowing how many teachers actually received my survey, it is impossible to really figure a return ratio. I know I sent 403 letters out to high schools and 322 letters were returned. About 197 of the surveys returned had the ratings marked but no comments or suggestions were made. The other 125 had the ratings marked and included extensive comments that I read through and copied into a notebook. I will address each of the nine areas of concern one at a time and include the teachers ideas and suggestions.

The first area I thought might be a stressful area for beginning teachers is the whole process of developing a grading system or policy. In my own experience, grading had been mentioned briefly but not enough to make me feel comfortable in developing a system of my own. I wondered how to weight assignments, keep track of tardies and absences and how to keep up with make-up work.
To my surprise, the results of the rating of this area showed that a majority of teachers did not experience much stress when developing a grading policy their first year. Sixty-six percent circled ones or twos, representing a low area of stress while twenty four percent circled threes, which is only a slight stress. A small ten percent rated grading policy at a four or five, showing it caused them quite a bit of stress.

The teachers indicating a low level of stress in grading policy recommended that first year teachers talk to other department teachers to find out what works best. New teachers should collect data from as many teachers as possible and come up with a grading system that will work best for them. Some recommend the traditional 90% A, 80% B, 70% C scale and a total point system may work best because the less math involved the better.

The most emphasized points brought up in the survey were to make the grading scale very clear to the students from the first day of class and to be consistent and fair. Each student should receive a copy of the grading policy and it may even be beneficial to require the parents to sign it to ensure that they too are aware of the policy. Consistency may be hard to come by at first, but it is essential to keep peace between the students and the teacher. Papers must be graded carefully and grades recorded correctly to avoid any problems. It is also important to set reachable goals for the students to achieve because of the idea of self fulfilling prophecy. Teachers that expect their students to do well usually see better results than those who have no confidence in their students.

The teachers who had some stress in this area explained that it was caused by things such as teacher blaming parents, apathetic students, grades that did not reach expectations, the thought of failing too many students, too much make up work and simply not having enough time to get everything graded. These kinds of problems cannot be solved by learning anything in the college classroom, but they can be eased by the reassurance that
every teacher experiences these situations and feelings at one time or another and that they have all learned how to deal with them in their own way. Patience and time management are two areas in which teachers become experts.

One teacher summed up his thoughts on this area well by stating, "It is very difficult to understand and accept the fact that no matter what you do as a teacher, you are still going to have students who get D's and F's in your class. The best thing to do is except it and teach middle of the road. That way A students don't get bored and F students still have a chance."

The next area of concern to be addressed is that of scientific equipment available to teachers. The ratings in this area would give a nice bell shaped curve if charted. The amount of ones and fives here came to close percentages of eighteen and fourteen respectively while the number of twos and fours tied at twenty percent each. Number three was circled the most with twenty seven percent. This seems to prove there are about an even number of teachers on the extreme ends of the scale while most are middle of the road.

Many of the teachers circling ones or twos stated their low stress level was due to the fact that they were lucky enough to walk into a school system that was very well equipped. Most of the larger schools in Indiana have the money to adequately supply science departments.

The smaller schools, on the other hand, are where problems in the availability of scientific equipment arise. Teachers revealed similar problems throughout the state: old equipment, lack of equipment, lack of organization in equipment storage and lack of familiarity with equipment available. Another big stress factor is simply the lack of time available to develop labs, set up, clean up and find things. Some teachers try to relieve
their lack of equipment by purchasing their own or bringing things from home. This can also cause stress because of the expense. There just isn't enough money spent by most schools on science equipment.

Although the lack of equipment can be frustrating, it teaches an instructor to improvise and be creative enough to get around the problem. No one wants a boring class and lab work is one of the best ways to break the monotony. Projects can be assigned to students to make models, maps, charts and pictures to not only brighten the room but also expand the teacher's resources. Many science magazines contain good ideas for inexpensive and easy labs that can be done in the classroom as well. The resources are out there if a teacher takes the time to subscribe.

Some of the stress created by lack of time to prepare labs can be reduced if the school system has adopted good textbooks, which is the next area addressed by the survey, text familiarity. Starting the year off with a new text is very stressful for some while others don't really see it as a problem. Again the tally of percentages showed that the number of threes circled came in first with thirty one percent, indicating that there may not be people completely stressing out over new texts, but most are not completely comfortable with the idea either.

Many teachers commented that they really depended on the textbook their first year or two because even after four years of college they didn't know all there is to know about science and the textbook was necessary for guidance. I think it is a fair assumption to say that no teacher knows their subject area as well right out of college as they do after teaching it several years.

The biggest stress factor mentioned in this area is the amount of time spent preparing each night for the next day's classes. Most new teachers will have more than two preps to
do each night, which can get very time consuming if it is done well. Too often new teachers are not hired much more than one or two weeks before the school year is scheduled to begin. This is hardly enough time to get familiar with the textbook let alone try to plan out lessons for the entire year.

Some textbooks come complete with labs, quizzes, worksheets and tests already made up while others do not. If a first year teacher is lucky enough to have these resources available along with books of his or her own, the stress factor here will be lowered considerably. If not, more time will be tacked onto the daily preparation and one may never seem to get ahead.

A few other considerations falling into this area that cause stress are trying to decide what information needs to be taught in depth and what information may simply need to be skimmed over. It is up to the individual teacher to decide how much time to spend on what area and how to pace the chapters best to cover all the necessary information. New teachers, because they have never done this before, find it stressful to make these kinds of decisions. Older teachers suggest that new teachers need to be more confident in their area but not a afraid to answer a question, "I don't really know." They also suggest that new teachers get their textbook as soon as possible and skim through it to see what it contains. Even though new teachers don't know all the facts, they should know enough that a re-reading of material will freshen up their knowledge and a few notes will have them ready to teach. Other textbooks should be used along with any files other teachers in the department will allow the new teacher access to. The main thing is to stay at least one day ahead of the students in preparation and have an outline of overall objectives and goals for the school year. It is essential for new teachers to always act like they know what they are doing.
Keeping an organized file of all notes, study guides, worksheets, quizzes and tests is another mandatory practice for first year teachers. These resources can be used year after year with slight alterations and will save much time as the file grows more complete. After saving everything for a year or two, a new teacher has laid a firm foundation and can begin to challenge himself or herself to come up with new and unique ideas about how to teach certain subject matter. The toughest part is sticking out the first grueling year and realizing that all the time spent is really not going to waste.

Much time will also be required in the next area addressed in the survey, discipline. I expected this area to be the largest area of stress and was proven correct when sixty-six percent circled fours and fives. Only nineteen circled ones or twos, indicating that not many first year teachers feel comfortable in the discipline area. I think this would be the appropriate time to discuss administrative support as well simply because a good administration backs up teachers in the area of discipline and takes some of the weight and responsibility off of the teacher. Those that had the hardest time with discipline also seemed to have the least administrative support. Many even suggested that, when it comes to discipline, new teachers should be prepared to deal with problems alone because the administration can not always be counted on to help.

Although all teachers have problems with discipline from year to year, new teachers obviously have more because they lack the experience. New teachers are not usually too much older than the students in age, therefore it is often hard for new teachers to adjust to the role of authoritarian instead of friend. A majority of the teachers that returned surveys stated colleges do a very poor job of preparing teachers in this area. More discipline courses should be offered or even required as well as taught by people who have had experience in dealing with discipline first hand.
Because of this lack of readiness, new teachers are many times overwhelmed when faced with defiant students who want to make things difficult. Students try extra hard to torment first year teachers simply because they know the teacher has had no experience. This is where some helpful suggestions from older and wiser teachers may be extremely helpful.

The first and maybe the most important practice for new teachers to do is simply to be firm but fair. Rules need to be set from day one and written out so they are always available for students to see. Punishment for the disobedience of these rules should always be enforced and if they won't be enforced the rule shouldn't be made. Consistency is the key to success in this area. It is suggested that parents be made aware of these rules as well.

Experienced teachers recommended new teachers be very strict at first to let the students know they mean business from the very start of school. It is always easier to become more tolerant after awhile than to start easy and try to become strict. The old saying, "Don't smile until Christmas" may be a little too severe, but there is certainly some truth in the message. One of the worst mistakes a first year teacher can make is to try to become a "buddy" to students without first gaining their respect. It is much easier to run a classroom on the basis of respect than friendship.

Letting students know from the first day of class what is expected of them and holding to those expectations is another vitally important part of discipline. Students will perform much better in a class with clear objectives where they know what must be done to receive the grades they desire. Teachers must also treat everyone the same and not give any student the benefit of a doubt. In this way it is much easier to be fair.
All new teachers should know the school discipline policies by heart and establish classroom rules that follow these policies. It is a good idea to discuss all discipline rules with the administrators at the beginning of the year to not only make sure the rules are online with the school rules but also to find out if administrative support will be adequate enough to back them up. The amount of support new teachers can expect will vary greatly from school to school, but in any situation, communication is the greatest way to know. It is the responsibility of the teacher to communicate to the administration anything that might be taking place. Teachers cannot expect administrators to help with situations of which they are not aware.

Another good practice for new teachers and experienced teachers alike is to keep a written log of all behaviors and disciplinary actions that take place day by day. Even if no discipline is administered at a particular time, behavior should be documented and filed away. Having this kind of written record of behavior will allow no room for doubt or uncertainty if or when further disciplinary action should become necessary. Parents will not be as quick to doubt a teacher who has kept a written record of offenses week after week. This will take much pressure off of the teacher if the situation should become sticky.

Many teachers emphasized the importance of getting to know the administration before even signing a contract with a school. By talking to the other teachers in the system and to the administrators themselves, a new teacher should be able to get a good picture of how much support to expect. A strong administration is vital to first year teachers simply because they may need it to fall back on if times get tough. The support will vary from school to school of course, but it is within the teacher's power to sign or not sign with a school having a weak administration. Usually administrators will do what they can to
help all teachers be successful. They are the ones that hire teachers and they want them all to do well.

Not only is it important for first year teachers to have administrative support, but it is also important for them to have good staff rapport as well. An overwhelming forty-five percent of teachers rated this area as a one and many stated that it is not an area of stress but rather a relief. First year teachers need to ask a lot of questions and heed a lot of advice from those who have been in the profession for awhile. All teachers were new teachers once and can easily relate to the anxieties of first year teachers.

First year teachers are taking a giant step from college student to professional career, and it is never any fun to be the new kid on the block. Just like any other relationships, it takes time to build trust and support between teachers. Teachers are people with a wide variety of personalities that may sometimes clash, but will just as often develop into lasting relationships. A new teacher really only needs one teacher to team up with for support and constructive criticism. The current Mentor Program has done a good job seeing that new teachers are assigned to one other teacher in the same area to provide this assistance.

Another important thing for all teachers to do is communicate among themselves and with other teachers throughout the state to share suggestions and ideas. Chances are any problem new teachers may run into has been solved by someone else that may have some good advice. All science teachers should be encouraged to join professional organizations to keep up in the field and gain professional contacts. One such organization is HASTI, the Hoosier Association of Science Teachers Inc.

The next area that concerns all science teachers, not just beginning ones, is the necessity of lab safety. Most teachers agree that labs are a necessary and beneficial way for students to learn, but there is always some stress and apprehension caused by the ever lingering
thought of "what if?" To my surprise, a majority of teachers surveyed did not mark this as an extremely high area of stress, but they made good comments and suggestions to justify their answers.

Because no teacher can predict when an accident may occur in lab, it is essential to take every precaution possible before the school year even begins. Upon entering their new science room, new teachers should have all the safety equipment checked by professionals so any necessary changes can be made before school starts. The school system is responsible for ensuring the safety of the school, so if teachers fulfill their part by informing the administrators of any potential problems it is out of their hands. It is also necessary to inventory any and all chemicals to make sure they are stored properly and still safe to use. Many schools have very old equipment and chemicals that should simply be properly discarded. The teacher must also make sure the classroom is set up in such a way that makes labs possible. Proper ventilation, enough gas jets and sinks are all important. Too often teachers have to switch rooms to do labs because their own room is not properly built or equipped.

After all of these requirements have been filled, the teacher can begin to make up a list of lab safety rules for the students to follow. It is a good idea to require students to pass a test over lab safety before entering the lab station and also send a copy of the rules home for the parents to sign and send back. Although it may seem unnecessary for teachers to keep such a close eye on students who should know better, anything can happen in lab and if the proper preventative steps are not taken it probably will.

Many students do not realize the extreme importance of taking simple precautions during labs. They should wear goggles at all times, but year after year teachers struggle with students who don't want to wear them. Rules should be enforced at all times and
punishment quickly given to those that think they are "above the law." Students have a natural curiosity that often overcomes their common sense. When this happens, the students involved should be made examples of to ensure it won't happen again.

Some teachers feel very inadequate to conduct labs during the first several years of their teaching careers because colleges often do not emphasize the preparation or set-up of labs. Even if this is not a problem, it is hard to step from an extremely well supplied and high tech college lab to a very poor and old high school lab. The equipment is completely different and may be totally foreign. Because of this, colleges should spend some time teaching future teachers how to use what they have and improvise to come up with similar results.

To avoid dealing with lab safety because of the size of the class, the level of students in the class or whatever reason, many teachers settle for doing demonstrations for the class instead of having them do anything on their own. This ensures that no one will get hurt and greatly limits the possibility that anything will go wrong. Students may not learn as much as they would doing the lab themselves, but it is a decent avenue for teachers to take around the area of lab safety.

The last area of concern mentioned on the survey ties in with the several other areas that have already been mentioned and that is overall classroom environment. Very few teachers indicated that this was an area of stress their first year because they had too many other things to worry about. Although it is beneficial for students to have a good classroom environment to learn in, it may be difficult for the new teacher to spend much time on the classroom for the first year or two.

It is an accepted fact in the teaching profession that teachers will rarely be completely happy with the room they are given. Some common dislikes may be lack of chalk board
space, no windows, uncomfortable temperatures, not enough sinks, not enough seats, not enough storage area, etc. Most of these problems are out of the control of the teacher and may not be important enough for the school to spend money to change. Because of this, teachers must be able to adapt to anything and be flexible enough to teach well no matter what the conditions. Ultimately, the atmosphere of the classroom is controlled by the attitudes of the teacher and not on the actual environment.

Even if teachers are placed in the worst rooms, a little creativity and flexibility will do wonders. Many teachers commented how they simply added their own personal touches in ways such as bringing in plants, hanging up science posters and pictures, having students make models or bringing in small creatures for students to see. If there isn't enough chalkboard space, use an overhead projector or hand out copies of notes. If the class is too big to do labs, split it up into two days and let half the class work at a time. These things may seem like major inconveniences at the time, but a good teacher will make do with what is available and go on. There will always be something about a room that isn't liked. The key is to accept what is given and put it to its best use.

Finally, after discussing all of the topics addressed in the survey I must mention an area of importance brought up by many teachers as probably the hardest thing for new teachers to handle. A large number of teachers feel that lack of time is the number one stress factor first year teachers experience and for which they are not prepared. Teaching is not just teaching but also paper grading, test making, record taking, preparing and often coaching or participation in some other extra-curricular activity. With all of these responsibilities young and old teachers alike often feel overwhelmed and always behind. New teachers may actually have it a little easier because they don't usually have the added responsibilities of a family or home. When these responsibilities are added, teaching
becomes a large amount of work that seems to never end.

Lack of time, as I have mentioned before, is not an area in which colleges can easily prepare new teachers. There will never be any more than twenty-four hours in one day. Hopefully, by the time a student completes four years of college, he or she will be somewhat good at time management. It might be beneficial for college instructor to cover time management in an education course to make future teachers more aware of the time teaching really does take up. Too many people are under the impression that teachers have it easy because they only work nine months out the year, but anyone who has ever attempted to teach before will surely say differently.

CONCLUSION

Since the time education began, I think it is safe to say that new teachers have been under a slight degree of stress. Teachers have a large amount of responsibilities placed upon their shoulders and very large shoes to fill. They play the role of counselor, friend, and authoritarian. In today's society they are often called upon to fill the role's that are not filled in the home. Along with all of these responsibilities, teachers are also expected to do a great job teaching. They have to deal with difficulties like poor lab equipment, a bad classroom environment, new textbooks, developing their own grading system, discipline, a good or bad administration and lack of time.

As a result of my survey, I discovered it is quite normal for first year teachers to feel stress. I also discovered that once teachers make it through their first year or two, the profession becomes a little easier. The most trials and tribulations will come during the first year when teachers sink or swim.
Although there are many areas that may cause a certain degree of stress for first year teachers, the biggest concern of most teachers surveyed seemed to be the lack of time first year teachers have to get everything done. Few colleges really prepare new teachers for the large amounts of work that is expected from them and many new teachers start the school year unaware that it will become a problem. The best advice experienced teachers gave for this dilemma is to organize time and not be afraid to ask for help. Other teachers are on time schedules just like new teachers, but they may have a strategy to share with new teachers. The only way to find out anything is to ask.

The most important piece of advice that experienced teachers could give new teachers is the idea that communication is the key to the success. Any questions, problems, difficulties, etc., that may arise can always be handled better when two or more people work on a solution. Older teachers are the largest resource a first year teacher has simply because they possess something that cannot be given to new teachers during their college preparation, experience. This experience can make or break the first year of teaching for a beginning teacher. Thanks to this survey, as a new teacher, I plan to put this advice to use and ask as many questions as I possibly can.
ABSTRACT
Dear Science Department Chairman,

I am an Honors senior at Ball State University and majoring in science education. The following page is a questionnaire I have developed to provide me with information for my honors project. This project will not only help prepare me for my first teaching position, but if it is published, will assist many other future teachers as well.

I would greatly appreciate your help by making copies of the questionnaire and distributing them to your science teaching staff. I have included a postage paid envelope for you to return the questionnaires. Please return them by Friday, October 4th, so that the results may be correlated. In case the envelope is lost, please return the questionnaires to the following address:

Michael P. Mahan  
North Quad. 320  
Ball State University  
Muncie, IN 47306

Thank you for your time and willingness to assist me with this project.

Sincerely,

Rene Franks
Dear Science Educator,

I am a science education major at Ball State University and wish to better prepare myself and other beginning teachers for the unforeseen hurdles faced in the first year of teaching. I would greatly appreciate your help in my senior project by filling out the questionnaire and writing any advice you may have for beginning science teachers. Please return this form to the head of your science department by Friday, October 4th, or mail them to Michael P. Mahan, North Quad 320, Ball State University, Muncie, IN 47304.

Thank you,

Rene Franks

1. Was your first teaching job in your hometown or close to the area where you grew up? If not, how far from home did you go for your first job?

The following is a list of possible causes of stress for first year teachers. Please rank each one according to the amount of stress it caused you as a first year teacher; 1 represents the lowest level and 5 the highest. Expand on the areas you feel strongly about and make suggestions on how you might have been better prepared. Your ideas are critical to my project!
grading policy 1 2 3 4 5

scientific equipment available (i.e., microscopes, chemicals, models, etc.) 1 2 3 4 5

text familiarity 1 2 3 4 5

discipline 1 2 3 4 5

staff rapport 1 2 3 4 5

administrative support 1 2 3 4 5
Salary 1 2 3 4 5

Lab safety 1 2 3 4 5

classroom environment (i.e., blackboard space, size, lighting, etc.) 1 2 3 4 5