

EFFECTIVE USE OF HUMOR IN A SECONDARY SCIENCE CLASSROOM

by

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## ABSTRACT

Students and administrators have often commented positively about my ability to bring humor into the classroom, but I had never made a direct correlation between this humor and student achievement. The purpose of this study was to try and make that connection by using humorous warm-up activities, assignments, and lectures during two astronomy lessons. Initial results showed improvements in student participation and recall, but overtime the humor was less effective.

## INTRODUCTION AND BACKGROUND

I teach at a small 6<sup>th</sup>-12<sup>th</sup> grade charter school called Highland Tech Charter (formerly Highland Tech High) in Anchorage, Alaska. Highland Tech has been open since 2003 and is a part of the Re-Inventing Schools Coalition (RISC). RISC is not a Carnegie unit or time-based system, but is recognized as a performance-based system (“You are here:,” 2010). We don’t use traditional grades, instead students must show proficiency in all content areas and each of the contents standards in order to complete the necessary requirements to graduate. For example, I teach science levels 1 and 3 (both involve Earth and Space Science). There are 22 standards in level 3, 11 content based and 11 science process based. It does not matter how young or old a student is, how well they have done on previous assignments, or how many times they attempt the same subject matter, they do not officially move up to level 4 until they complete all 22 standards of level 3. Traditionally students are required to show mastery of about 60-70% of the content in any given class, our goal is for students to show mastery of 100% of the content. This means I have students that have a wide age range in each class. In my level 3 science classes that were used to implement this project I have students as young as 13 and as old as 17.

Our school is unique in its philosophy and model of education for Alaska and the United States in general, but our student population is a fairly normal sample of Anchorage itself. We are a public school but students must apply and be accepted in order to attend. The application and interview process does not segregate based on intellectual level, income level, or anything else other than deciding if our model fits the student. During the 2009-2010 school year our student population was 238 students compared to a population of over 49,000 students at the district level. Approximate numbers show our student populace at 57% white, 13% Alaska Native, and 30% listed as African American, Asian/ Pacific Islander, Hispanic, or as a combination of two or more ethnicities. Twenty-seven percent of our students are listed as

'economically disadvantaged' by our school district. We have 14 fully licensed teachers in our uniquely titled subject areas: reading and literature (reading), communication literacy (writing and oral), numeric literacy (math), technological literacy (technology), science and global environments (science), social environments (history, government, geography), personal, social and service skills (character building), and career and content literacy (job preparation). All our teachers also teach random electives that include classes like leadership, art, drama, fitness, and many more that change on a semester by semester basis.

In the 2009-2010 school year I had my 9<sup>th</sup> and 10<sup>th</sup> grade students complete a survey concerning different ways to improve my science classes. I simply asked them to give me some pros and cons about class in general. One common response from many students was that they enjoyed my sense of humor, but none of these students listed how it benefited their learning. I was a little surprised by this, knowing that as I teach I infrequently plan for humor, I rarely say any of the funny stuff that pops into my head, and I do not deliberately do any physical mishaps or slapstick humor. This got me thinking, if students recognize and remember the humor that exists in class already, can I intentionally plan and use humor in my classroom to benefit student achievement overall?

Since moving to Alaska four years ago I have noticed that during the long dark winters students can be even more lethargic and unaware than usual. It was my hope that using humorous warm-ups and activities in class would allow the students to wake up and participate more in class. Participation meaning staying on task with assignments and completing them on time.

Additionally, I wanted to find out if the humor used in lectures, discussions, and those activities before, could help students recall information. My students have a poor record of test and quiz taking in my class. Many claim some sort of test anxiety but I don't see this as true for most of them, because our annual state test scores are above average. I'm hoping adding humor

will allow for more of the presented information to stick and therefore result in better overall scores.

I did not imagine all this humor inclusion will result in a mass of hysterical teens, but I did worry some about how this would affect my classroom management overall. The planned humor was content based, not a class period of Def Comedy Jam, and was used at specific times during our hour and twenty minute classes. I believed that this might lead to a more comfortable and loose atmosphere in class, but not necessarily result in worse behavior.

The main focus of this research was to discover how using content related humor in the 9<sup>th</sup> grade science classroom could effect student achievement. This was addressed by concentrating on three questions: Will student participation increase when humor is used in warm-ups, activities, and lectures? Will lectures and assignments that incorporate humor result in students being able to recall more information on assessments? How will student behavior be affected when humor is intentionally used as a teaching tool?

## CONCEPTUAL FRAMEWORK

There are many reasons a teacher chooses to use humor in the classroom. Studies have included the use of humor in easing test anxiety, identifying positive types of humor used, indentifying negative types of humor used, increasing student attentiveness, building stronger teacher-student relationships, and as a classroom management tool (Wallinger 1997; Wanzer 2010). All of this is in the hope of increasing student learning. While most researchers agree that humor plays an important role in every classroom, identifying specific successful strategies to do so has been difficult. Many of the findings have been inconsistent (Wanzer, 2010). “The literature does not provide a causal link between humor and learning. The research basis for humor in the classroom actually begins with the idea that laughter can stimulate communication

and act as a conversation starter, tension-breaker, or therapeutic intervention” (Huss, 2008, p. 29).

Identifying the different types of humor that students perceive as either enjoyable or useful in their learning has been thoroughly researched and has resulted in agreeable findings. Teachers and students in college and secondary schools have repeatedly recognized offensive humor, disparaging humor (directed at student), disparaging humor (directed towards different groups of people), and phony laughter as examples of humor that should not be used in the classroom (Bekelja, 2006; White, 2001).

Most types of humor are deemed appropriate if they include the topic of discussion. This can incorporate but isn't limited to stories, jokes, using objects or props, role-playing, and cartoons. Off topic humor can also be used as a stress reliever, icebreaker, or to aid in controlling conflict when it is used in a way not insulting or embarrassing to the student (Bekelja, 2006). Self-deprecating humor only seems to be appropriate when recognizing a teacher's own mistakes.

One thing to remember is that, rather the use of humor is appropriate or not, some students may not comprehend the humor at all. Emerich (2003) performed a study focusing on students with high-functioning autism and Asperger's syndrome and their ability to recognize humor. As with related studies they found that students with high-functioning autism and Asperger's syndrome have difficulty processing and understanding jokes and other types of humor that are above a pre-school or elementary level.

Another debatable way to use humor in the classroom is when a teacher includes jokes or funny material on tests. McMorris (1985) studied this and tested two groups of students. The tests covered the same material but one test asked questions in a humorous way, while the other just stated the questions. The test results did not show any measurable difference between the two groups, but when the students were surveyed, the group that took the humorous test had a

more positive response to the test in itself. McMorris (1997) restated his findings after other studies reporting that humorous tests may not result in better scores, but they do lower test anxiety and improve the overall mood of test takers.

Teachers that include humor in lectures rather than on tests have had more success. R.L. Garner (2006) performed a study on undergraduate students where he gave a lecture on statistics to two groups of students. One lecture was purposely made to be funny, while the other just included the basics of the stats lesson. Both of the groups then took a test on the information. Garner reported significantly higher scores from the group exposed to the humorous lecture.

These results are congruent with surveys asking students about the benefits of humorous lessons. Students have expressed improvements in attention span, stress relief and a healthy learning environment when the teacher uses humor (White 2001; Neumann 2009). Garner suggests that the positive effects of humor are produced when the teacher is able to create a more relaxed classroom atmosphere and use the humor to provide breaks that allows for students to cognitively digest the information. Many teachers struggle with using the proper time management in allowing for students to absorb what was just presented, incorporating humor into a lesson plan could be a tool to overcome this.

For my use and in what I think combines all of the above information, humor has been deemed a good tool to use in classroom management (Visser, 2005). If appropriate use of humor can result in a better learning environment, relieve some stress, and increase the receptiveness in a classroom, the general behavior of the class should be improved. Fovet (2009) studied the effects of humorous classroom management strategies with students with emotional, social, and behavioral difficulties. Fovet states, "While not sufficient on its own, it (humor) could therefore work as a building block in the shaping of warm and productive teacher–student relationships" (p. 284). As for using humor specifically in the science classroom, there seems to be similarities between scientific discovery, artistic ability, and comical inspiration. Wandersee (1982) argues

that the same type of creativity for finding the humor in a situation is comparable to the thought process that goes into creating a new experiment or solving a genetics problem.

Teachers have repeatedly listed humor as an important classroom management tool, but answers vary on how and why this is so. It would prove valuable in science due to the fact that for many students science is listed as the most boring subject they have to study. If they laugh in science class it is usually due to immaturity or mocking the subject matter. The benefit of using humor in science should be comparable to Boerman-Cornell's (1999) reasoning when referring to his English class, "Humor equals acceptance and at least nodding approval. When students laugh about something in a piece of literature, they are accepting it and approving it" (p.68).

## METHODOLOGY

This project's goal was to see if using content related humor in the classroom would have an overall effect on student achievement including, student participation, student recall of information, and the behavior of students in class. I realize that humor plays an important role in many domains of life, but I wanted to know if it could be used particularly as a teaching tool.

### Participants

I chose my level 3 science classes as the focus of this study. At a traditional school this is equivalent to a 9<sup>th</sup> grade earth and space science class. I teach three of these classes averaging about 20 kids in each class. Ages of the students range from 13 to 17 and the male to female ratio is about even. What makes these classes stand out from a traditional classroom is the fact that not all the students in the room will be participating in the lessons I'm teaching. Commonly about 20% of the children are working on individual projects because these students have already passed the standards I'm teaching at the time. These students did not participate in the study, but were in my classroom at the same time. In all, 41 students participated and took the assessment

for the first lesson. Forty-seven students participated and took the assessment for the second lesson. Of these students eight have a documented Individual Education Plan (IEP) including certain learning disabilities, previous emotional disturbances, and one student with epilepsy. These were all taken into account when planning and executing each day of class.

Another difference with our school that needs to be noted is that our schedule runs on alternating 'A' and 'B' days. Meaning that if I see one class on a Tuesday for an hour and twenty minutes then I won't see that same group of students again till Thursday. During the treatment I had one of the level 3 science classes on the 'A' days and two of the level 3 classes on 'B' days. Throughout the study I was giving the lesson for the first time to the students in the 'B' day classes for no other reason other than that's how the schedule worked out.

### Interventions

My essential question is concerning the effect of content humor on high school science students. Specifically I wanted to learn more about how my use of humor in the classroom would effect student participation, behavior, and recall during assessments. The humor being tested will be implemented during each lesson that is not normally used in my current teaching. The two standards or topics that we covered during the study were star evolution and phenomena in space (Appendix A).

Particularly three parts of my normal teaching strategies were different. First, during the study each class began with some form of science humor. Usually class begins with a warm-up activity but very rarely is it humorous. I collected and used a substantial amount of jokes, comics, short videos, and stories during the treatment. These humorous warm-ups were not just presented but used to connect the science content being taught during the current lesson. Students were asked to try and make the connection themselves before discussing it as a class and moving into the day's lesson.

Secondly, during the portions of class that I lectured or gave notes I did my best to make these segments more amusing. This was done once again with some jokes, word play, video clips, and stories. Garner (2006) found that humor used in lectures resulted in higher test scores. However, this was performed on college students and not in a high school science class. In my classroom, lecturing about new vocabulary words or a historical scientist is usually difficult to get through. I intended to make the 10 minutes of note taking a little livelier through humor to see if this would result in higher assessment scores and receive a positive response from the student surveys.

The last intervention included two different short assignments during two lessons. For the evolution of stars lesson I asked students to make their own comic resembling one you would find in the newspaper. I showed them many examples, mostly from Gary Larson's Far Side (2007). They had a choice of designing a completely original comic or using a drawing that I had already completed (Appendix B) that required them to write captions for themselves. They were instructed to use their knowledge about stellar evolution and make a joke out of it. I also stressed that I was looking more for the content being correct and not just a joke.

The second assigned activity was for them to write a Chuck Norris joke that applied to the phenomena of space. These jokes have become popular over the past five years or so and are best explained with an example: "Chuck Norris plays Scrabble with numbers. And wins." The point of the joke is to make a ridiculous statement that includes Chuck Norris as the hero. Students were assigned to write their own joke, but it had to be based on the different phenomena of space topics covered in class. Both assignments were given to see if students being asked to do humorous activities would result in more participation and better quiz scores.

#### Data Collection

Table 1 provides an overview of the focus question, sub-questions, and the sources intended to use for data collection.

Table 1  
*Triangulation Matrix*

Focus Question: How will using content related humor effect student achievement in a 9th grade science classroom?			
Secondary Questions	Data Sources		
1. Will student participation increase when humor is used in warm-ups, assignments, and in lectures?	Student Interviews	Pre & Post Student Survey	'No Basis' comparison
2. Will lectures and assignments that incorporate humor result in students being able to recall more information?	Content tests	Student Interviews	Pre & Post Student Survey
3. How will student behavior be affected when humor is intentionally used as a teaching tool?	Teacher Journal	C.O.R.E. comparison	Student Interviews

Beginning in late January of 2011 I began to administer the pre-survey, this was followed by the other methods of data collection including my teacher journal, comparing 'no basis' scores for both lessons, comparing overall scores for both lessons, student interviews, C.O.R.E. comparisons, and completing a post-survey in early March. All of these sources were collected and analyzed in order to address the focus question; how will using content related humor in the classroom effect student achievement in a high school freshman level science classroom?

The pre- and post- student surveys (Appendix C) concerned both student participation and recalling content. The survey helped identify how students view humor in my class already and how they think humor affects their learning after the treatment is completed. It was interesting to see how my student's already view the humor used in my class and to then to compare that data to the post survey. Both surveys were completed by 35 of the 42 students that participated in the study. This was done in order to view student opinion concerning humor in the classroom in general, as well as compare student opinions before and after the treatment. Six of the participating students completed only one of the surveys and therefore were not used in the totaling of the data. Available answers for the survey (strongly disagree, disagree, neutral, agree,

and strongly agree) were given a numerical value for analysis, 1-5 respectively. Nothing was changed on the survey between the time the pre- and post-survey was given, not even the typo on statement number 7. After finding the average response for each statement from both surveys I determined that scores that were 2.5 or lower would be deemed statements that my students disagreed with; questions that received a 3.5 or higher would be quantified as statement my students did agree with.

My teacher journal was started with some notes about the pre-survey and continued daily until completion of the study. It included my observations of students and their reactions to activities as well as notes on attendance and behavior. The journal also contained my own personal feelings about each day and the lesson that was given. This daily log of events and emotions throughout the treatment was a consistent method to collect qualitative data.

The final scores for the students were the most important piece of quantitative data collected in order to compare last year's students and this year's students that were subjected to the humor treatment. Overall scores for the two lessons were determined using our schools preconceived rubric for level 3 science (Appendix A). The lesson on the evolution of stars assigned a poster activity, a comic activity (Appendix B), and a quiz as the final assessment (Appendix D). The lecture and discussion for this lesson was fairly short and included some Far Side comics (Larson, 2007) for humor and modeling of the comic assignment. For a student to receive an 'advanced' they had to complete their comic and star poster with additional nebula criteria, and have a perfect 10 out of 10 on the quiz. Students had to complete the activities and pass the quiz with 8 out of 10 correct in order to receive a 'proficient'. If these criteria were not met than scores of 'developing' and 'emerging' were assessed depending on what they did complete according to the rubric. If a student didn't pass the quiz and failed to turn in either part of the assignments they earned a 'no basis'. Once the activities and quiz were graded the score was converted to a number for data analysis as shown in table 2.

Table 2  
*Rubric Score Conversion*

Score Entered	Data Score
Advanced=	4
Proficient=	3
Developing=	2
Emerging=	1
No Basis=	0

The second assignment covered our phenomena of space standard (Appendix A). The same student chosen topics we concentrated on last year were used this year: gravity, black holes, dark matter, dark energy, time travel, extraterrestrial life, and planet formation. Student requirements for this assignment included a short presentation, writing a Chuck Norris joke based on the topics, and another short quiz. I modeled the presentation for them first using gravity as the topic and including humorous stories about Albert Einstein. After that students chose one of the topics individually and had one day to prep their presentation using a provided guide (Appendix E). Presentations were the following class period which students took notes on, this was trailed by a day of review, and then the quiz (Appendix F). Students needed to present, write a Chuck Norris joke, and have a perfect score on the quiz for ‘advanced’. For ‘proficient’ students must have presented, wrote a joke, and received 14 out of 16 on the quiz. ‘Emerging’ and ‘developing’ scores were based on a combination of the assignments and quiz score based on the rubric (Appendix A). If a student did not present and missed six or more points on the quiz they were given a ‘no basis’. Once the quizzes were graded and final scores entered they were converted into numbers the same as before.

Student interviews (Appendix G) were similar to the surveys, only more in-depth and including inquiries regarding humor and behavior. Interviews were done with students in order to obtain a more personal and candid piece of qualitative data concerning how the treatment

affected the students. These interviews were conducted on seven students the week prior to the initiation of the first lesson and two weeks after the final lesson was over. I tried to select students that had a variety of academic success and relatively good attendance in an attempt to speak with students that would be present for the entire duration of the treatment. The seven students I spoke to ranged in age from 15 to 17 and had been in my science level between 1 month and a year and a half. Each student interviewed were asked the same four questions (Appendix G) and encouraged to be honest. Answers to interview questions were recorded by hand and later compared to the other student's answers as well as the scores they received during the treatment.

Accumulating data to assess behavior changes was done by examining the C.O.R.E. forms that were issued this year and last. C.O.R.E. is an acronym representing our schools code of conduct, Culture Of Respect for Everyone. A C.O.R.E. form (Appendix H) is used as a disciplinary tool allowing the student to share their explanation of what occurred in school. Once the student fills in their side the teacher completes their own and a private discussion follows in order to determine consequences. These forms are collected by our office and are accessible to teachers. When the treatments conclude I was able to compare the number of CORE forms I gave out during the study to the average number I usually give during a similar period time.

To collect data for the C.O.R.E. forms I went into my own files for last year and counted every one given to a student that was in my level 3 science class. During the same time frame last year I only assigned two C.O.R.E. forms. I also tallied the number I had given for the past year and a half to that same group of students, 18, and averaged that per month to get my average monthly forms that were given out, 1.29. During the humor treatment I only gave out one C.O.R.E., to a student that was sleeping in class.

The Analysis of Variance (Anova) tool was used to examine the statistical difference between my pre- and post-survey as well as my assessment scores comparing this year's students to last. The Anova assumes equal treatment of variances using the general linear model (GLM). The first computation is that the data relationship has a probability greater than the F-statistic ( $Pr > F$ ). If this number turns out to be less than 0.05 there is a statistical significance between the two datasets that were compared. The Anova tool allowed for the evaluation of datasets from the pre- and post-surveys as well as the final scores from both lessons.

### Timeline

The table below shows the schedule that was followed to implement the treatment.

Table 3

*Implementation Schedule 2011*

Time Completed	Process
December	Data Collection of last years C.O.R.E. forms, Academic Review information, and assessment scores
End of January	Pre-surveys and pre-content tests, student interviews
Month of February	Implementation of content humor strategies
Month of February	Continue teacher journal daily
End of Feb. – early March	Post-Surveys, post-content tests
Early March	Student Interviews
Early March	Data collection for tests, surveys, C.O.R.E., and Academic Review
Late March	Data Analysis

## DATA AND ANALYSIS

### Analysis

After comparing this year's students to last years it is clear that my students this year had better overall scores on the two different standards I tested with no compromise in behavior. Nevertheless I cannot ultimately claim that the improvement of this year's students was only because of the increase in humor. Both the standards covered during the treatment, evolution of

stars and phenomena of space, showed an improvement over last years scores, interviews and surveys showed a positive response to the treatment, and the students behavior showed no measurable difference. However, my own observations and the student interviews also suggest a simple alternative hypothesis explaining the improvement in student success; students enjoyed and reacted positively to trying something in class they had never done before. The evidence supporting and conflicting with the humor treatment is described below.

### Participation

When testing if class participation increased due to the rise in content related humor I observed a fairly abrupt change in effort on assignments. This was continuous through the first week during the star evolution lesson and is confirmed with the lack of ‘no basis’ scores given, student interviews that reflect on the energy during that first week, and the slight changes in answers from the pre- and post-survey.

During the post-interviews students were asked if the humorous warm-ups helped get them ready for the lesson. Of the seven students that were interviewed two shared both positive and negative comments, the other five had only positive responses. One of the negative remarks was about a few of the warm-up activities being, “Not being funny at all”. The other negative response will be discussed later. The six positive replies ranged from a simple, “Yes, it helped” to, “The humor worked better, especially in the morning,” and finally, “Yes, it brings more energy into the room”. One of the students that had negative comments also had positive including, “The more related the humor was to the topics the better it got us going”. As a whole the answers those seven students gave reaffirmed what the scores on the test showed; the content related humor increased their participation.

The pre- and post-survey both had responses showing that student opinion was in favor of the science based humor used in the study. Table 4 shows questions 4, 11, 12, and 14 on the survey were all related to class activity participation and the results from those questions were all

in favor of the content based humor being helpful with their activities in class. After implementation of the humor treatment students were surveyed again resulting in the data for those questions shifting slightly further in support of the humor strategies. However, none of the comparisons were statistically relevant since questions 4, 11, 12, and 14 all had p-values above the 0.05 threshold.

The first two assignments given during the treatment were to make a poster comparing and contrasting the evolution of small and massive stars and the comic assignment (Appendix B). Last year the only assignment given was the poster itself but 8 students still received a 'no basis' score, meaning they did not do the poster and failed the quiz. This year all 41 students that were assigned the poster and comic completed it. Of course posters turned in were of different qualities, but all students completed them to some degree and turned them in. This resulted in every student earning a minimum score of 'emerging'. A comparison of these scores is shown in Table 5.

Table 4  
*Response Totals for Pre- and Post-Survey*

Survey Response Data			
Question #	Mean		p-value
	Pre-Survey	Post-Survey	
1	4.14	4.06	0.60
2	3.80	3.46	0.13
3	3.09	3.20	0.57
4	2.63	3.06	0.12
5	1.89	1.97	0.67
6	3.09	2.94	0.55
7	3.06	2.86	0.45
8	1.77	2.06	0.15
9	3.40	3.69	0.16
10	2.54	2.54	1.00
11	3.17	3.40	0.40
12	3.46	3.69	0.29
13	3.63	3.71	0.70
14	3.51	3.60	0.68
15	3.94	4.17	0.29

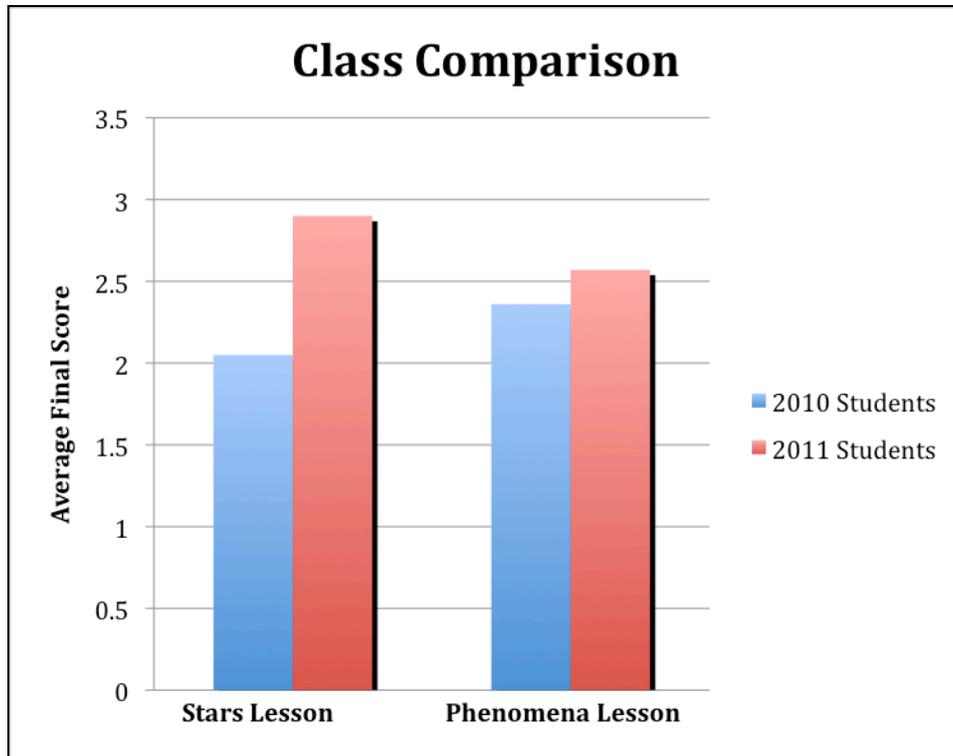
Table 5  
*Score Breakdown*

Number of Students Earning Each Score					
<b>Evolution of Stars</b>					
	4-Advanced	3-Proficient	2- Developing	1- Emerging	0- No Basis
2010	7	15	2	9	8
2011	14	14	8	5	0
<b>Phenomena Of Space</b>					
	4-Advanced	3-Proficient	2- Developing	1- Emerging	0- No Basis
2010	10	13	5	10	4
2011	11	22	4	3	7

### Student Recall of Information

My second focus question related to students being able to recall more information on assessments due to the humor incorporated into the science content. After the first quiz on star evolution it was certain that something was different from last year's students. Quiz scores were higher on both lessons, responses and data from the student interviews and surveys were in agreement with humor being beneficial, and the comic and Chuck Norris joke assignments showed some obvious correlations to learning the material.

By averaging this year's scores for the evolution of stars lesson and the phenomena of space lesson and then comparing them to the scores that students obtained last year there was a consistent difference (Figure 1). Last year the two lessons averaged a score of 2.10 and 2.36, this year the average score was 2.90 and 2.52 accordingly. The first lesson on evolution of stars was statistically significant,  $F(1,81)= 9.48$ ,  $p=.003$ , the phenomena lesson was not,  $F(1,87)= 0.59$ ,  $p= .45$ . Both of the lessons had 6 more students receive 'proficient' or 'advanced' scores compared to the year before. Unquestionably, this year's students did better overall on the two standards than the year before. Table 5 above summarizes the scores for the two units for the control and intervention group.



*Figure 1.* Comparison of Past Two Classes.

During the two lessons students completed two assignments that actually asked them to be funny. The evolution of stars session had students making comics similar to Far Side (Appendix B) and the phenomena of space included a task that asked students to write their own Chuck Norris joke. When these were completed I was surprised by how creative some of the kids were, but even more impressed with how the solutions of these assignments turned up on the student's quiz answers. On the stars quiz (Appendix D) question 3 asks students to compare and contrast a red giant and white dwarf. Many of the student's answers were extensions from the comics they had made and shared a few days before. The same thing happened with the phenomena of space quiz and the Chuck Norris jokes. I cannot say for sure how many students intended to reference the comics and jokes since a number of them could have simply been using similar language and not in fact remembering the assignment, but some were nearly identical to the jokes that were written. For example, one students comic that used the red giant and white

dwarf drawing showed the white dwarf asking, “Still gonna blow up?” and the red giant responding, “Still an under achiever?” On the quiz for that class, three students referred to a white dwarf as an ‘underachieving’ star.

The Chuck Norris jokes similarly merged the content and humor with inventive results. Some examples include: “Chuck Norris needed a trash can, so he round-house kicked the fabric of space and made a black hole”, “Only Chuck Norris can enter the event horizon and come out alive”, “Chuck Norris traveled back in time billions of years and met Mr. T. They had a battle of epic proportions. We know this fight as the big bang”, “A new alien species is created every time Chuck Norris doodles”, “You can time travel with Chuck Norris, if he round-house kicks you at 88 miles an hour”, and my favorite, “There are alternative universes, with multiple versions of our solar system, earth, all our living things, all the people, and the cultures. But we live in the only one with Chuck Norris”. Some students showed more content knowledge than others and some were funnier, but more importantly the content was effectively used.

The fourth question posed to students during the interviews asked them if they thought my use of humor was helpful for student learning, and asked them to explain why they thought what they did. Overwhelmingly students related humor to being a good memorization tool: “It helps understanding in a new way”, “If it actually makes me laugh I remember it easier”, “It depends, if it’s on topic it helps you remember, kinda like the mnemonic tricks for spelling”, “Some jokes helped, but not all of them”, “Yes, it helped just because it helped me pay attention and because it was different”, “It helps because it relates to me personally. I can express myself through it easier.”, “Laughing at something helped me remember it. When it caused an emotion it was memorable and if it wasn’t funny then it didn’t harm anything anyway”. It was apparent when looking at the final scores that the students had varying success with the humor treatment, but even those students with ‘emerging’ and ‘developing’ scores had encouraging comments

about the use of the comics and jokes. According to the students the content related humor helped them remember the stars and phenomena of space content.

Survey question 15 (Table 4) was a statement relating to learning and recall. Number 15 states, "I can remember something that made me laugh better than something that didn't make me laugh." This comment received a score of 3.94 on the pre-survey, firmly on the 'agree' side. After the treatment was over and students took the same survey again that same statement registered a 4.17. This was not statistically significant,  $F(1, 68) = 1.13$ ,  $p = .29$ , but was the highest result from the survey. In fact, of the 35 students that took the post-survey not a single one marked 'disagree' or 'strongly disagree'. Now I admit it isn't the best worded statement for this survey, but it is undeniable that the students recognize the connection between humor and memory.

### Behavior

The third and final focus question asked if student behavior would be affected by the increase in content related humor? In short, behavior in the classroom didn't change much at all. I observed a slightly louder classroom during the time students had to create their Chuck Norris jokes and comic, but this was in no way out of line with my classroom expectations or school rules. Students also recognized the increase in talking but responses also included reasoning that the talking was also a sign of increased participation. The comparison of C.O.R.E. forms also showed no signs of different behavior with the amount issued actually going down this year compared to last.

One of the larger concerns with the implementation of this study was the effect it would have on student behavior. Fears included the use of inappropriate jokes, students losing focus on the actual content of the lesson, and students becoming disinterested if the material and activities weren't enjoyable enough. None of this was observed and recorded in my teaching journal during the duration of the treatment. Warm-up activities got their attention even if they didn't

laugh out loud, students didn't use all their time just writing jokes or making comics, and only one inappropriate joke was heard, which is probably less than normal in a freshman level class. What I did make note of was the level of talking that increased when students had time to work on their comic and jokes. Most of it was on topic and when it did reach a level deemed too loud one reminder in each class solved the problem. A few students mentioned the talking in their interviews as well, commenting: "Students did talk more, but they were talking about the comic they were making".

One measureable way to compare if behavior changed was to look at the number of C.O.R.E. forms given out to students last year and this year. If behavior was worse this year I would of expected to hand out more forms this year. That wasn't the case. Last year I assigned two C.O.R.E. forms to students in level 3 science during the lessons on stars and phenomena in space. This year I only assigned one, to a student that was sleeping during the review game the day before the star quiz.

In the end I don't think behavior in the classroom was affected in a negative way. If anything the increase in participation and overall scores points to an increase in positive behavior. Students did get more assignments done that first week than they had in the past, but I still don't think behavior was affected one way or another. The classes went along just as they had all year long.

#### Alternative Explanations

There are also compelling alternative explanations for increased participation. First, I came into class more energized. This was not done on purpose, but it was definitely more exciting for me to walk into class knowing that we would be examining Far Side comics or writing our own. I noted a few times in my journal about how classes were going by so fast, probably because I was enjoying myself more. My upbeat energy could of translated into more participation. The response from the students may have also been due to the fact that the humor

strategies were just something new to the students. Just trying something new and uncommon can be exciting for the class and add additional effort, not necessarily because it was humor related. And thirdly, this was my second year in a row teaching this lesson, I felt more comfortable with the misconceptions, questions, and overall expectations for what I was facing. Participation could of increased simply because I did a better job this year.

Some evidence that also challenged the thought that humor based instruction would increase participation was the fact that as the month of study carried on participation in the activities decreased. After the immediate boost in participation for the first lesson on stars the second lesson had a steady decline in students that kept on top of their assigned work. This is similar to the Hawthorne Effect (McCarney, 2007), where the subjects of a study react differently when they know they are being studied. My students may have initially reacted differently due to the new approach in the classroom. The first few days of lecture and my presentation on the phenomena of space were fine and enjoyable as a teacher. Beyond that there was a noticeable decline in on task students and quality of work that I consider to be a consequence of using the same strategy for a month straight. In short, the students just got tired of starting every class with something meant to be funny.

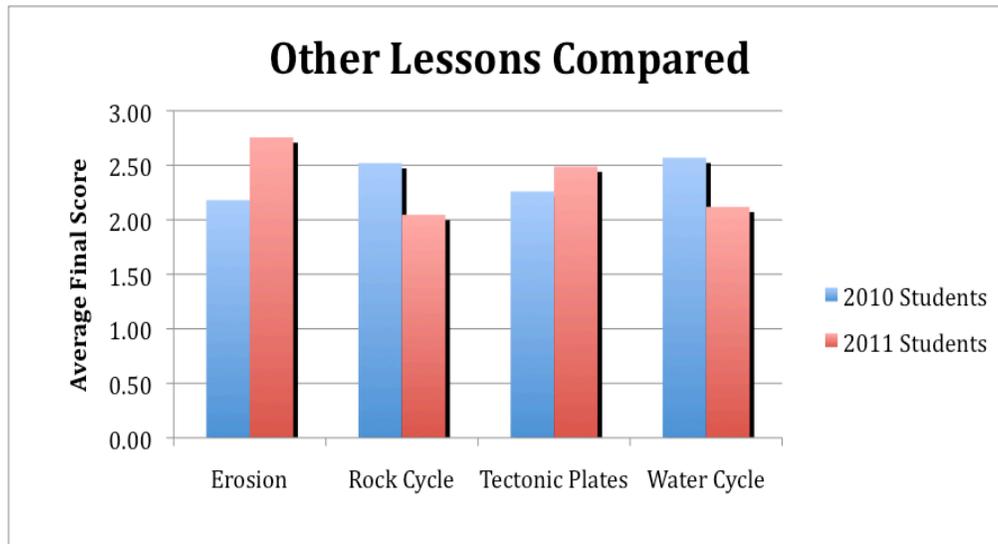
The other negative comment during student interviews mentioned before included some insight to the decrease of participation. This student actually received an ‘advanced’ score on the two standards but shared with me this remark on participation, “The first week it was new and different, then it got old. It was fun to hear the Chuck Norris jokes, but the warm-ups just got old. No offense Kellerby, but it just got boring-er”. I had similar notes in my teacher journal about the excitement level in class a few days before the quiz.

This “boring-er” effect was also observed in the pre- and post-survey (Table 4). Questions 1 and 8 on that survey essentially ask the same question about enjoying the humor in science class. On the pre-survey both questions displayed results indicating students liking

humor. On the post-survey these responses showed a change toward, but not across the other side. What this change is showing is that the students' enjoyment level of humor in class actually went down after the humor strategies were implemented. This as well was not statistically significant, but they were the only two questions that shifted measurably against the hypothesis.

Although it is obvious the satisfaction and newness of implementing science humor into the lesson wore off as time went on there was one other factor that probably affected the data, attendance. Attendance was poor the week prior to the second assessment. Four of the seven students that received 'zeros' missed 1 or more days of the lesson before the assessment. These students were given additional time to do their presentation but in the end they didn't present to the class. Even with attendance issues these students remained a part of the study because I was comparing this year's students to last years. I'm sure last years kids missed school days as well, but I'm not able to obtain that data to make a comparison.

When I began thinking of alternative justifications for the increase in overall scores it occurred to me that this year's class of level 3 science kids might just be better students than last years. To check this I went back to other lessons that we completed this school year. I used the same data scheme as before to look at science lessons that stayed relatively the same between last year and this year. Figure 3 shows the average score comparison of those lessons which did not incorporate the humor strategy. If my students this year were simply better overall learners I would have expected to see higher scores from them on every lesson, but as Figure 2 shows there was no consistent comparison.



*Figure 2.* Other Lessons From Past Two Years Compared.

On the whole, I have enough valid data and observations to claim that student scores and participation improved this year over last year without sacrificing behavior issues in the classroom. More assignments were completed and turned in, quiz scores increased over last year's students on both standards, and student interviews supported the idea that content related humor had a positive effect on their learning. However, I do not have strong enough data to pinpoint this improvement on the use of humor in the classroom. The quiz scores from the evolution of stars lesson were statistically significant but no other pieces of quiz scores or survey questions were. The second lesson resulted in higher scores by a small fraction but also resulted in more students earning a 'no basis' score. There was a very noticeable academic difference between this year's and last year's students, but I cannot say for certain that it was specifically due to the increase in content related humor.

## INTERPRETATION AND CONCLUSION

My focus question asked how the use of content related humor would affect student achievement, including changes in participation, recall of information, and behavior. Through

the course of the treatment I learned that students already recognize the humor used in my class as beneficial to their learning. What I think they were not accustomed to was humor being used as a learning tool. Overall my results were more consistent than many of the studies done previously, but as Huss (2008) stated prior I was “not (able to) provide a causal link between humor and learning” (p.2). It is likely that the humor I added in both lessons had a beneficial result but as Wandersee (1982) found in his reading, humor can have a positive effect on, “improving the function of students’ mental faculties, reducing classroom tension, making lessons easier to grasp, making learning more personal and enjoyable, and establishing a more efficient learning climate...(but) humor can not accomplish all of these things at once” (p.213). I believe the humor I incorporated in class did have a positive effect on the student’s own achievement, but this was not the only reason the scores improved over last year.

Of the three interventions included in the treatment I cannot single out one of them as the sole reason of improvement on the quiz scores. Garner (2006) found a correlation between humorous lectures and better test scores in his study on statistics students. Wandersee (1982) had written that there is a relationship between humor being used in science and students feeling more confident with their own problem solving abilities. I am unable to make that definite of a remark, but can claim that the humor used in class was beneficial to student learning and students showed clear correlation and interpreting skills when writing their own jokes and comics.

Despite the worry that additional classroom humor could lead to management issues I found that behavior in my room didn’t change much, if at all. I was not seeking to improve the student conduct in my room prior to the study, but instead was seeking to identify any changes for the good or bad. Aforementioned research suggested humor in the classroom could lead to better teacher-student relationships (Fovet, 2009) and develop better student behavior overall (Visser, 2005). While I understand these ideas and can imagine a scenario where this is true I

myself did not find this happening in my own room during the treatment and student surveys and interviews do not mention or show this kind of improvement either.

When looking at all the survey data, assignments turned in, quiz scores, and student interviews it is very apparent that this years students did better than last year. I cannot identify if it was the humor used, the fact that we tried something very different in class, or the fact that I personally was in teaching a topic for the second time instead of the first, but I do believe it was a combination of the above that resulted in a higher level of student achievement. The humor was not a catalyst for bad behavior, but I think it was the catalyst for an improved lesson. Like most things though, humor can be overdone and that can result in a variety of problems. I think the second lesson on the different phenomena in space was less successful because of this.

## VALUE

As the implementation of this study went on I continuously thought about how the warm-up activities, lectures, and assignments could be improved. The strategy proved itself well enough to be used again, just not for nearly four weeks in a row. I now think about using humor in a way very similar to how many teachers use Howard Gardner's theory of multiple intelligences (Gardner, 1989). All students learn different ways and teachers usually differ their instruction in order to give students a variety of opportunities to learn with activities they are successful with and to practice with activities they struggle with. I think humor fits into this. Some of my students took to their comic or joke writing like they had been doing it for years, others thought it was the most difficult assignment to date. I'm not going to argue if humor should be a new intelligence, or be called a skill, or an ability, but I now think of it in the education sense as a tool. The cognitive ability it takes to be given some information and form that into a working joke is underestimated. To me the fact that the majority of my students were

able to finish a joke or comic shows a high level of interest, understanding, and acceptance of difficult material.

When using humor the immediate feeling is that if you use it, it must evoke a response of laughter. This wasn't the case during my study at all. My students were not rolling on the floor chuckling, occasionally the majority would laugh, but most of the time they would sit quietly or give me a quick one-exhale-laugh. That didn't bother me at all and the best part was they kept paying attention even if the joke was bad. Actually the biggest laughs in class during the treatment were at failed jokes that were so bad it was funny. This actually helped our class get over the fear of writing jokes themselves.

I plan to share this information with my co-teachers at our annual retreat this August. Many of them have been involved in the conversations and planning around the entire study. More than one found it all a little silly to be even researching humor as a topic, much less pursuing an action research project with it. I think it will benefit the school to learn about a new way to help students learn.

As for me personally, I intend to use more humor based activities in my other lessons. They were enjoyable, challenging, and useful in the study, not just for the students but for me as well. In the future I'll be sure to space out these activities as it proved to lose its appeal after a while. The data that was collected and compared over the last two years will also lead to some changes. Due to this project I now have average scores for two years worth of students on six different standards. I'm sure there is some commonalities between those lessons that have been successful and those that have not been. In all, I feel better equipped to analyze my student's responses in person and on paper to make improved decisions on my planning and performing a lesson.

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APPENDICES

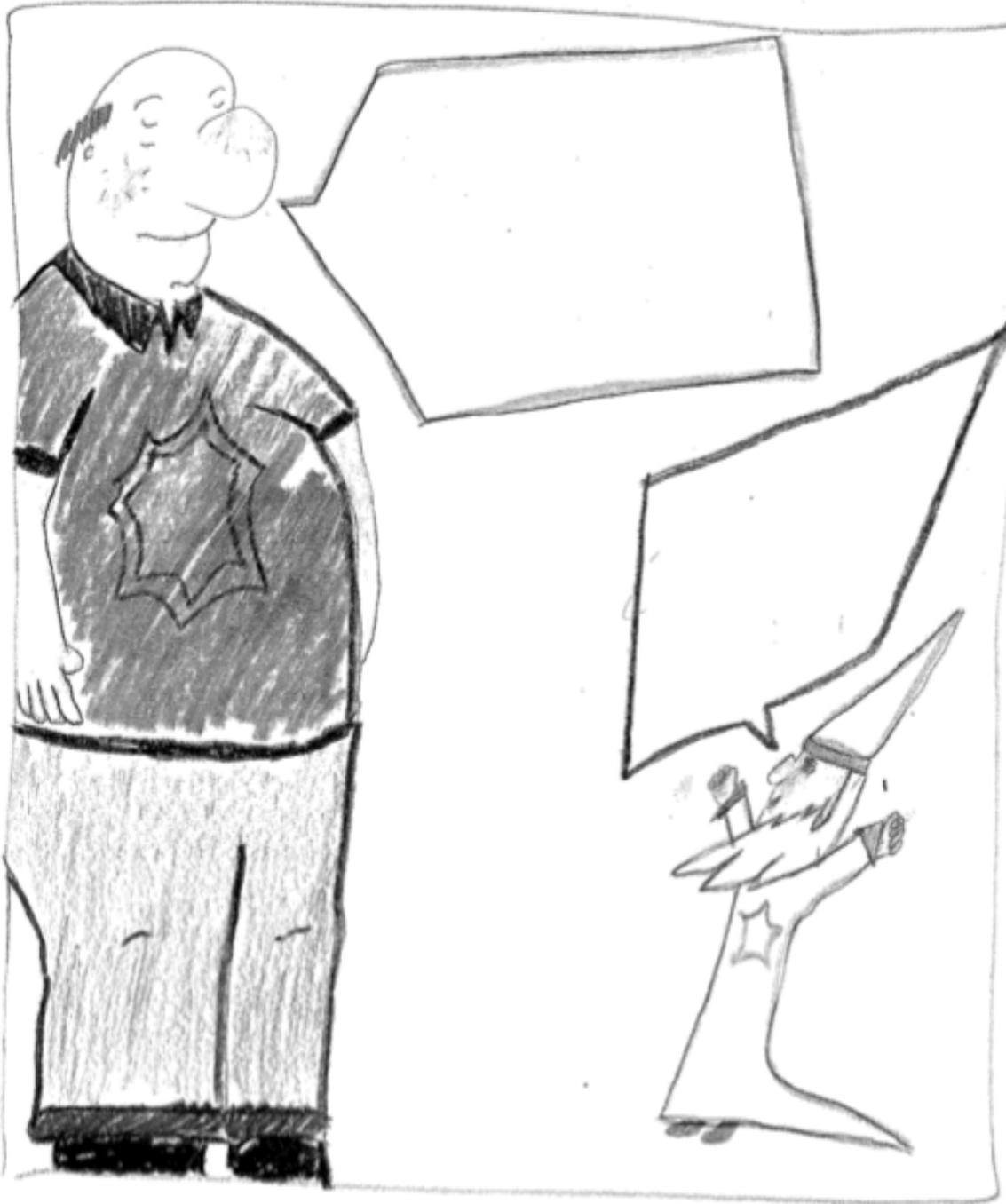
APPENDIX A

HIGHLAND TECH SCIENCE LEVEL 3 RUBRICS

Standard Name	SC.03.AS.04	SC.03.AS.05
<b>Description</b>	<b>Recognizes how stars change over time in our expanding universe</b>	<b>Recognizes and describes the phenomena in the universe (i.e. black holes, nebula)</b>
<b>Advanced</b>	<ul style="list-style-type: none"> <li>* Illustrates and labels an original life cycle of low-mass and massive stars</li> <li>*Explains where our own sun is in it's cycle</li> <li>*Describes how stars fuse to maintain equilibrium</li> <li>* Compares and contrasts a proto star, supernova, pulsar, and neutron star using an appropriate graphic organizer</li> </ul>	<ul style="list-style-type: none"> <li>*Identifies and describes 6 phenomena in the universe</li> <li>*Compares and contrasts how each is formed, and where they occur in the universe</li> </ul>
<b>Proficient</b>	<ul style="list-style-type: none"> <li>* Illustrates and labels an original life cycle of low-mass and massive stars</li> <li>*Explains where our own sun is in it's cycle</li> <li>* Compares and contrasts a proto star, supernova, pulsar, and neutron star</li> </ul>	<ul style="list-style-type: none"> <li>*Identifies and describes 4 phenomena in the universe</li> <li>*Compares and contrasts how each is formed, and where they occur in the universe</li> </ul>
<b>Developing</b>	<ul style="list-style-type: none"> <li>* Charts the life cycle of one star</li> <li>* Defines nebulae, proto star, supernova, pulsar, and neutron star</li> </ul>	<ul style="list-style-type: none"> <li>*Partially explains some of the phenomena in the universe\ *</li> <li>Attempts to compare and contrast different phenomena</li> </ul>
<b>Emerging</b>	<ul style="list-style-type: none"> <li>* Shows the life cycle of a star with use of a reference</li> <li>*Attempts to define nebulae, proto star, supernova, pulsar, and neutron star</li> </ul>	<ul style="list-style-type: none"> <li>*Partially explains some of the phenomena in the universe\ *</li> <li>Attempts to compare and contrast different phenomena</li> </ul>

APPENDIX B

STAR EVOLUTION COMIC ACTIVITY (BLANK)



APPENDIX C

HUMOR IN THE CLASSROOM SURVEY

Below are fifteen different statements that concern humor in the science classroom. Please rate each statement using the following scale:

1. Strongly Disagree (SD)
2. Disagree (D)
3. Neutral (N)
4. Agree (A)
5. Strongly Agree (SA)

You can only choose one number per statement. Choose the one that best expresses your personal feelings about the statement. You can leave it blank if you don't understand the statement.

	<b>SD</b>	<b>D</b>	<b>N</b>	<b>A</b>	<b>SA</b>
1. I enjoy the humor used in this science class.	1	2	3	4	5
2. I wish the teacher in science class used more humor.	1	2	3	4	5
3. The humor in class is always based on the topic of study.	1	2	3	4	5
4. I'm usually ready to learn during the first 5 minutes of class.	1	2	3	4	5
5. There is never anything funny that happens in science class.	1	2	3	4	5
6. I find the lectures in science class boring.	1	2	3	4	5
7. I rarely remember what happened what happened in science class the next day.	1	2	3	4	5
8. I wish the teacher in science class used less humor.	1	2	3	4	5
9. The humor used in class helps me relax.	1	2	3	4	5
10. When my science teacher tries to be funny he never really is.	1	2	3	4	5
11. I enjoy reading comics/cartoons that are related to science.	1	2	3	4	5
12. When the teacher uses some jokes when I take notes it makes it easier to pay attention.	1	2	3	4	5
13. The humor used in my science class is beneficial to my learning	1	2	3	4	5
14. When the class begins with a humorous warm-up activity it helps me focus and work the rest of class.	1	2	3	4	5
15. I can remember something that made me laugh better than something that didn't make me laugh.	1	2	3	4	5

APPENDIX D

STAR EVOLUTION TEST

Name \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_  
**LEVEL 3 SCIENCE LIFE CYCLE OF QUIZ**

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**1. On the back of the paper describe and illustrate the evolution of a small star.**

**2. Describe a supernova.**

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**3. What is a Red Giant? How is it different than a White Dwarf?**

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**4. What is a nebula? Where is it in a stars cycle?**

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**5. What are 2 similarities and 2 differences between a proto star and neutron star? (make sure they are differences in astronomy not language)**

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APPENDIX E

PHENOMENA OF SPACE PRESENTATION OUTLINE

# Mysteries in Space!!!

NAME(S) & PERIOD

TOPIC

## THE BASICS

WHAT IS IT?

WHY IS IT A PHENOMENA?

WHERE DOES IT OCCUR?

DO WE KNOW HOW IT FORMS? IF SO, HOW?

MOST INTERESTING THING ABOUT IT?

APPENDIX F

PHENOMENA OF SPACE QUIZ

NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

## PHENOMENA OF THE UNIVERSE

Short Answer: Answer the following question in complete sentences  
(2 points) How did the bed sheet with the plastic white ball and the bowling ball on it attempt to represent Einstein's theory of relativity and gravity?

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Matching: Match the correct phenomena question with the corresponding topic. Answers can only be used once. (1 pt each)

- |                          |  |
|--------------------------|--|
| 2. black holes_____      | A. How can dust and gas around stars form these?                             |
| 3. dark energy_____      | B. How are galaxies held together?   |
| 4. dark matter_____      | C. Can you alter space and time to allow people to visit the future or past? |
| 5. planet formation_____ | D. What fills the space left by the expansion of the universe?               |
| 6. time travel_____      | E. How can mass alter or create this pulling force?                          |
| 7. aliens_____           | F. Can a supernova really create a hole in space and time?                   |
| 8. gravity_____          | G. Are other places in the universe able to support life?                    |

SHORT ANSWER (2pts each)

9. How are black holes and gravity related?

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10. What is the difference between dark energy and dark matter?

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11. Do you believe in alien life forms? What is your evidence or logical reasoning to support this?

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APPENDIX G

STUDENT INTERVIEW QUESTIONS

1. How would you describe the humor used in my science classroom?
2. Do the warm-ups that teachers use work and help you get ready for the lesson?
3. Do you think students behave differently in a classroom that incorporates humor? Is it better or worse?
4. Do you think my use of humor is beneficial to student learning? Why or why not?

APPENDIX H

C.O.R.E. FORM

# C.O.R.E. Acknowledgement Form

“Culture of Respect for Everyone”

Date: \_\_\_\_\_ Time of Incident: \_\_\_\_\_  
P.S.S. Level: \_\_\_\_\_ Length of Time at HTH : \_\_\_\_\_  
Person who assigned you the C.O.R.E form: \_\_\_\_\_

**TO BE COMPLETED BY PERSON RECEIVING THE C.O.R.E.**

In your own words, describe what happened that resulted in a C.O.R.E. form being issued:  
**(who, what, where, when)**

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Who should we talk to about this incident? (Witnesses)

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Explain **why** you think this incident happened:

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Sometime during this school year, have you received a C.O.R.E. for a similar incident?  
\_\_\_ YES \_\_\_ NO

How could **you** have solved this problem?

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Signature: \_\_\_\_\_  
Name: \_\_\_\_\_

- Student Recommended Consequences:
- Lunch Detention
  - After School Detention
  - Work Detail
  - ISS
  - OSS
  - Letter of Apology
  - Closed Campus Lunch
  - Tech Suspension
  - Other:

Advisor: \_\_\_\_\_

