



## EXPLORING EMOTIONS IN SCIENCE AND PHYSICS LEARNING: A COMPARATIVE STUDY BETWEEN JUNIOR AND SENIOR HIGH SCHOOL STUDENTS

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### ABSTRACT

Students' emotions play a critical role in learning. Unfortunately, emotions are frequently ignored by educators in educational practices. This study aims to explore students' emotion during science and physics learning, with a focus on negative emotions during learning process in class. A quantitative survey design was employed. The study included second-year students from two secondary schools and two high schools in Kerinci Regency, Indonesia. The Achievement Emotions Questionnaire (AEQ) Class-Related Emotions used to collect the data. A total of 217 students (130 secondary school and 87 high school students) participated in the survey. After excluding blank, incomplete, and invalid responses, the final sample comprised 89 secondary school and 67 high school students. The finding revealed that a significant proportion of students experienced moderate (72.44%) and high (19.87%) levels of negative emotions. No students experienced very high negative emotions and 7.69% students experienced low levels of negative emotions. The findings highlight specific stronger negative emotions experienced by students including shame, anxiety, and boredom. Although no significant differences were found overall negative emotions between secondary and high school students, comparative tests were also conducted for each statement. There are 31 out of 43 that differ significantly, divided into 20 and 11 statements significantly higher for higher for secondary school students and high school students, respectively. This finding revealed that secondary school students experienced higher level of embarrassment, restlessness, and anxious. In contrast, high school students experienced more unpleasant and ashamed in the learning process. Instructional approaches should incorporate emotional intelligence and prioritizes students' emotional needs. This approach can help minimize negative emotions during learning, thereby improving academic performance and emotional growth.

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## 1. INTRODUCTION

For many students, physics is often perceived as the most challenging subject and mastered by only a few people or students. Additionally, high school physics encompasses the broad range of content, from fundamental concepts to more advanced in modern physics (Winter & Hardman, 2020). Physics is also commonly viewed as the most difficult (Wuttiprom et al., 2017) and tedious (D. H. Putri & Pranata, 2023) subject within science disciplines. Surveys at the beginning of the class among high school students also indicate that physics concept is as difficult to grasp, many mathematical calculations devoid of practical significance, and overwhelmingly extensive, making it the least favored subject among students in science disciplines in high school.

Physics is an engaging subject and closely related to daily life. The utilization of mathematical formulas in physics is pivotal because mathematical relationships and equations constitute the core of many physics principles (Winter & Hardman, 2020). Therefore, equations and calculations should always be accompanied by activities that foster conceptual understanding and related to students' daily experiences (Pranata et al., 2024). Effective learning activities that relate linear equations to students' daily experiences can enhance their understanding (Rohimah et al., 2025). Presenting physics as a science or disciplines to understand real-world phenomena can enhance students' appreciation of its relevance and applicability (Winter & Hardman, 2020). Despite the vastness and complexity, physics concepts are interconnected. Recognizing the connection and relationships between subject help to mitigate the perception of content overload.

Most of the science and physics learning focuses on students' cognitive development and skills acquisition. Learning process involves interactions between students and their environment, perceptions and emotions, both positive and negative, play a significant role. Those emotions significantly impact students' learning outcomes (Vilhunen et al., 2023). Unfortunately, students' emotions during learning process are often ignored by teachers (Macklem & Gayle, 2018). Teachers' primary focuses are students' cognitive development and skills acquisition (Pranata, 2023a). Students' emotions in science and physics learning are therefore crucial to explore. Teachers must recognize and comprehend students' emotional states, as these are integral to the learning process (Pranata et al., 2023; A. L. Putri et al., 2024; Wulandari & Pranata, 2023).

Previous research has shown that students' emotions play significant role in learning. There are positive and negative emotions that contribute to the learning. Students's emotion can predict academic achievement and dropout rates (Timonen et al., 2022). conducted a systematic review confirming that positive academic emotions consistently promote better learning effects compared to negative emotions, with intervention studies showing improved performance when students engage with emotionally positive learning materials (Tan et al., 2021). On one hand, positive emotions, such as enjoyment, can enhance learning outcomes. On the other side, negative emotions, such as boredom, are related to impairment of any learning strategies (Vilhunen et al., 2023). Therefore, understanding emotions, such as enjoyment, motivation, disengagement, and rejection, that act as drivers and barriers to learning is essential for improving learning process.

Although research on emotions in education has advanced considerably, many aspects remain unexplored (Sepianto et al., 2024; Vilhunen et al., 2023). First, research on students' emotion during science and physics learning process remains limited. Therefore, in science and physics learning, where students' emotion plays crucial role, exploring students' emotion becomes imperative. By examining the spectrum of emotions, this research aims to identify the dominant negative emotions experienced by students. Second, emotions are context-dependent and in dynamic states. Students' emotions may evolve over time and differ between secondary and high school. The research intends to compare emotion between secondary and high school students. Exploration and comparison potential differences in emotional responses across educational stages, valuable insights can be gained to inform the design interventions and support strategies that enhance students learning in science and physics.

## 2. METHOD

A quantitative survey design was conducted to explore and analyze students' emotion in science and physics learning. This design allows for collecting large number of data, enabling statistical analysis (descriptive and comparative), and generalization of findings (Creswell, 2019). Students' emotion data were collected using a well-established instrument from previous research, the Achievement Emotions Questionnaire (AEQ) (Pekrun et al., 2005). There were 43 statements related to emotions in learning (Class-Related Emotions, during-class section of AEQ). These statements were translated into Indonesian, validated by two experts, and distributed to students in the form of an online form (Google Form). The response options ranging from strongly disagree to strongly agree.

The study involved two schools for each level (secondary and high school) in Kerinci Regency, Indonesia. The school's selection was based on availability, accessibility, or representativeness. The population is second- and third-year student from the school because they have experienced science and physics learning. Unfortunately, the third-year students were not permitted by the school committee as participant. Through total population sampling, the questionnaire distributed to all students (130 secondary school students and 87 high school students). Based on the data collected from all students, some were not included in the analysis as they were blank or invalid for various reasons such as some statements unanswered or all statements with the same response. The final data was determined after data reduction, rather than through an additional sampling technique. The number of data involved in the analysis was 156 students, comprising 89 secondary school students and 67 high school students.

Data analysis was processed using descriptive and comparative statistics, according to the research design applied, which was quantitative descriptive and comparative. The research approach involves using statistical methods to describe variables and test hypotheses across different groups (Tran et al., 2021). Quantitative researchers use descriptive statistics to summarize data characteristics, including measures of central tendency and spread (Kotronoulas et al., 2023). Comparative statistics allow researchers to examine differences between

groups and test the statistical significance of these variations (Yusup et al., 2019). Descriptively, the aim was to obtain a description or overview of students' emotions in science and physics learning. Emotion levels were presented from various perspectives, including overall, each school, and categories of students' emotional levels. The student emotional levels were indicated in the form of negative emotions, so the conversion of student responses followed rules as shown in Table 1.

**Table 1. Questionnaire Response Conversion**

Response Option	Score	
	Negative	Positive
Strongly Agree	5	1
Agree	4	2
Neutral	3	3
Disagree	2	4
Strongly Disagree	1	5

Then, emotional level categories were defined as shown in Table 2. Thus, higher average scores could be interpreted as increasingly negative emotional conditions in learning.

**Table 2. Student Negative Emotion Levels**

Mean Score ( $\bar{x}$ )	Negative Emotion Level
$4 < \bar{x} \leq 5$	Very High
$3 < \bar{x} \leq 4$	High
$2 < \bar{x} \leq 3$	Moderate
$1 \leq \bar{x} \leq 2$	Low

Furthermore, the comparative aspect aimed to compare students' emotions in science learning at the secondary school level and physics learning at the high school level. The comparison between the two groups explored using Mann-Whitney U-tests because data collected likert scale treated as ordinal.

### 3. RESULTS AND DISCUSSION

#### **Descriptive statistics**

After collecting and organizing learning emotion data from two different school levels (secondary and high school), the analysis began with the elimination of data deemed invalid. There were 68.46% and 77.01% valid data for secondary and high schools, respectively. Subsequently, descriptive statistical analysis was conducted for the valid data. The results are presented in Table 3.

**Table 3. Descriptive Statistics**

Data	N	Mean		Median	Std. Deviation	Skewness	
		Statistic	Std. Error			Statistic	Std. Error
Overall	156	2.65	0.04	2.65	0.48	0.31	0.19
Secondary School	89	2.70	0.05	2.70	0.52	0.35	0.26
High School	67	2.58	0.05	2.60	0.42	-0.03	0.29

The results are presented for students' negative emotions in learning overall and their distribution across different school levels, namely, science learning saturation (secondary school) and physics learning (high school). The analysis shows that the overall level of students' negative emotions is in the moderate category, with an average of 2.65 out of a scale of 5. The distribution of students' negative emotion levels, classified according to Table 1, is shown in Figure 1.

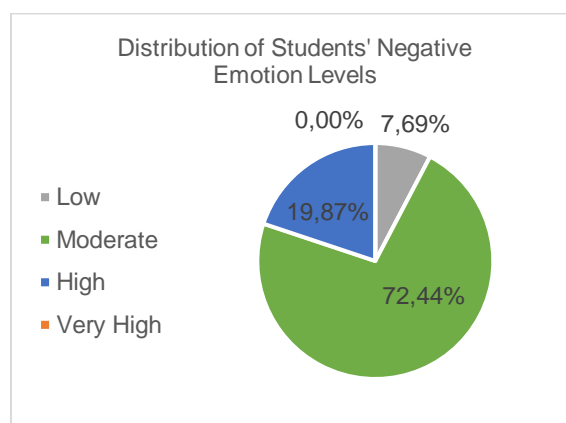


Figure 1. Distribution of Students' Negative Emotion Levels

The distribution of student data in Figure 1 shows that most students (72.44%) have moderate negative emotions in learning science and physics. On one side, there are 7.59% of students with low negative emotions when attending science or physics classes. On the other side, no students have very high negative emotions, and only 19.87% of students have high negative emotions.

Upon reviewing the data from each statement item, it was found that no statement had an average score greater than 4 (representing the category of very high negative emotions). There are 7 statements with averages greater than 3 (representing the category of high negative emotions), namely statements 11, 33, 2, 24, 41, 42, and 38 in sequential order from the highest score. The highest negative emotion found is feeling ashamed or afraid to speak in class, represented by item number 11 with an average score of 3.353 out of 5. This finding aligns with the second highest score, which is feeling wrong when speaking, thus preferring to remain silent (item number 33). Furthermore, students also feel worried when others understand the material better than them (item number 2), feel embarrassed for not being able to show themselves well (item number 24), feel ashamed when others know that they do not understand the material (item number 41). Students also express feeling anxious when they do not understand the material (item number 42) and feeling bored, causing their minds to no longer focus on learning in class (item number 38).

This finding aligns with previous research that reported that ashamed as dominant negative emotions, and the level of boredom is more than anxiety (Seprianto et al., 2024). Other study found anxiety as dominant emotion in physics learning (Park, 2022). Boredom also found dominant in previous studies as negative emotion that related to impairment of any learning strategies (Vilhunen et al., 2023). Boredom can arise in various learning situations and should not be underestimated by teachers. Previous studies also revealed that students' boredom levels increase during learning when comparing students' boredom levels before and after learning (Utami et al., 2024). The main causes are students' confidence in participating in learning activities, feeling unable to face challenges in learning, and excessive anxiety. Students' cognitive and emotional fatigue in learning also significantly contribute to the emergence of boredom (D. H. Putri & Pranata, 2023).

Previous studies also categorize emotions based on their relationship with learning activities and learning outcomes. Emotions related to enjoyment, frustration, and boredom experienced during learning are activity-related emotions. Then, outcome emotions such as joy, hope, pride, anxiety, hopelessness, shame, and anger relate to success or failure. Thus, students' emotions can be studied more deeply whether related to activities or learning processes or their learning outcomes. Students who are afraid to speak, embarrassed to show themselves, and feel bored are classified as activity-related emotions. Meanwhile, worrying and being anxious about not understanding the material compared to peers are classified as outcome emotions. Activity-related emotions like enjoyment, anger, frustration, and boredom are linked to academic performance, with enjoyment positively related and anger and boredom negatively related (Camacho-Morles et al., 2022).

All student emotions in learning should be the primary concern of teachers. Teachers can also consider integrating learning with emotional intelligence (Pranata et al., 2023; Wulandari & Pranata, 2023). Emotional intelligence is divided into two main competencies, namely personal and social competencies (Goleman, 2006). Involvement in both is predicted to support the development of positive emotions in learning such as self-awareness, self-regulation, confidence, motivation, empathy, and social skills.

The analysis based on school levels indicates that the average level of negative emotions is higher for secondary school students in science learning (2.70) compared to high school students in physics learning (2.58). The distribution of negative emotion levels for both groups of students from different school levels is shown in Figure 2.

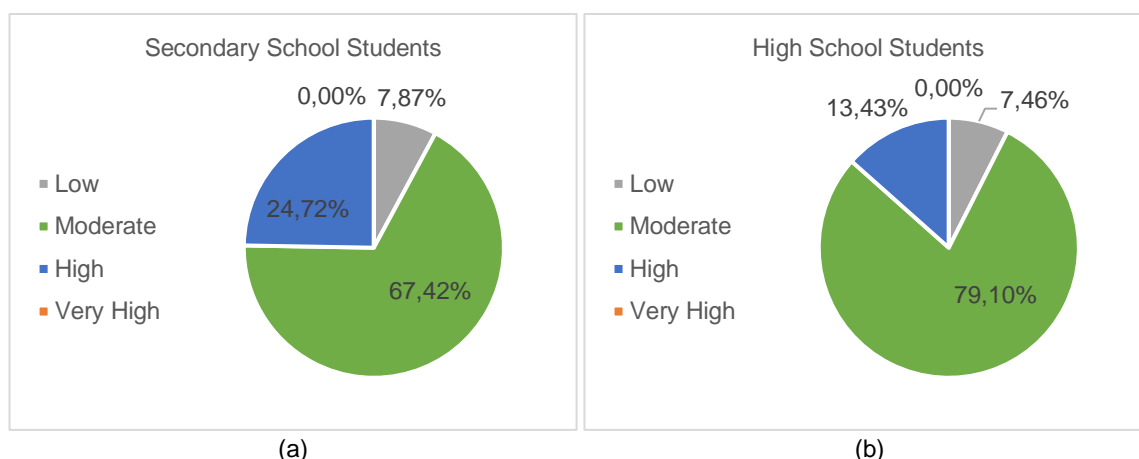


Figure 2. Distribution of Students' Negative Emotion Levels: (a) Secondary School and (b) High School

The same pattern is found for both groups of students based on the distribution of negative emotion levels. First, most students at the same level have moderate negative emotions, namely 67.42% and 79.10% for secondary school and high school students, respectively. Second, the emotion category with the second-highest percentage of students in both groups is at the high level, namely 24.72% for secondary school students and 13.43% for high school students. Third, the next order is also the same, namely low-level negative emotions. The percentages are almost the same for both students from both schools, at around 7%. Fourth, no very high-level negative emotions are found for students from both schools.

The difference in the average negative emotion score between students from the two schools is triggered by the difference in the number of students with moderate and high negative emotions, with a difference of 11.68% and 11.29%, respectively. This indicates that the percentage of high-level negative emotions in secondary school students is greater than high school students. Conversely, the percentage of negative emotions in high school students is found to be higher for the moderate category compared to secondary students. Although there is a difference in the average negative emotions between students from the two school levels, whether this difference is significant or not remains unknown. Further testing is required to determine the significance of the difference.

**Comparative Test**

Comparison between secondary and high school students' negative emotion using Mann-Whitney U Test are shown in Table 4.

**Table 4. Independent Samples t-test (Overall)**

Statement	Group	Mean	Median	Mean Difference	U	$\rho$
Students' Negative Emotions	Secondary School	2.70	2.7	0.12	3314	0.234
	High School	2.58	2.6			

The comparative test results show that the difference in the average negative emotions between secondary school students and high school students is not significant because  $\rho = 0.234$  ( $\rho > 0.05$ ).

Although no significant differences were found overall, comparative tests were also conducted for each statement item in the instrument. The results found significant differences in negative emotions between secondary school students and high school students, as summarized in Table 5.

**Table 5. Each Item Comparison**

The differences are significant			The differences are not significant (12 item)
Higher Average Scores for Secondary School Students* (20 item)	Higher Average Scores for High School Students** (11 item)		
2, 3, 4, 8, 15, 16, 19, 20, 21, 22, 24, 28, 31, 32, 33, 34, 35, 38, 41, 42	1, 7, 9, 11, 14, 17, 18, 23, 26, 30, 37	5, 6, 10, 12, 13, 25, 27, 29, 36, 39, 40, 43	

\*Positive mean differences in Tabel 6 (appendix)

\*\*Negative mean differences in Tabel 6 (appendix)

There are 31 statement items (out of 43 statement items available in the questionnaire) that differ significantly, divided into 20 items and 11 items for positive (higher for secondary school students) and negative (higher for high school students) mean differences. The three largest positive mean differences are represented by statement items number 35, 31, and 33. Statement number 35 is related to the condition of shame for being involved in classroom activities, with a significant average difference of 0.787 out of 5. Second, statement number 31 is related to other

negative emotions, namely anger during learning, causing excessive restlessness, with an average difference of 0.717. Third, statement number 33 is related to anxiety, with an average difference of 0.708. Especially when saying something wrong, so they prefer not to say anything. This means that secondary school students feel more embarrassed, restless, and anxious to be involved in the learning process. There are still 17 other statement items found to be significantly different, where secondary school students' negative emotions are greater than high school students' in science and physics learning.

In science learning at secondary school, students' negative emotions are likely to develop and are triggered by various factors. Consistent with the findings in this study, previous studies also revealed that feelings of fear, anxiety, lack of confidence, and feeling incapable and inferior to classmates are the main factors (Utami et al., 2024). Park (2022) also found anxiety was dominant in physics learning and test. Related studies revealed that excessive anxiety is assumed to produce task-irrelevant thinking that interferes with performance on tasks requiring attentional resources. Anxiety can reduce the efficiency of cognitive processing. Various approaches have been proven to reduce anxiety and fear of being wrong, such as learning using technology as a student answer confirmation tool (Pranata, 2023d). The presence of confirmatory tools can help students become more confident in their ideas and views when participating in classroom learning.

Furthermore, the three largest negative mean differences are shown by statement items number 1, 18, and 11. Statement number 1 is related to the condition of students not enjoying the learning process at school, with an average difference of 0.890. Second, statement number 18 is related to feelings of shame when saying something that seems foolish in front of other friends, with an average difference of 0.851. Third, statement number 11 is related to enjoyment like statement number 1, especially the condition of students not enjoying the time spent in class, with an average difference of 0.821. This means that high school students feel more unpleasant and ashamed or afraid of appearing foolish in the learning process compared to secondary school students. There are still 8 other statement items found to be significantly different, where high school students' negative emotions are greater than secondary school students' in science and physics learning. Physics appears particularly problematic, with students experiencing more negative emotions toward physics content compared to chemistry (Dávila-Acedo et al., 2021; Seprianto et al., 2024).

In physics learning at high school, students' negative emotions are likely to develop, triggered by various factors. Previous studies revealed that negative emotions can arise when learning activities or tasks given are either too easy, making them uninteresting, or too difficult, so they cannot be completed by students (D. H. Putri & Pranata, 2023). Research on challenging learning situations reveals distinct patterns of under- and over-challenge across educational contexts. Schwartze et al. (2024) identified four student groups in mathematics learning, finding that 13% experienced boredom due to over-challenge (low achievement, high boredom) while 21% faced under-challenge (high achievement, high boredom). Such situations trigger students' disinterest and lack of enjoyment in the learning process at school, as found in this study. Compare to previous study, students' enjoyment in learning physics found in moderate level (Park, 2022). Students with higher self-regulated learning skills reported fewer motivational challenges but more cognitive challenges. Teaching staff also encounter challenging situations requiring reflective practice to understand and respond appropriately to diverse student needs (Markkanen et al., 2020).

Emotions should be directed towards positive emotions such as enjoyment, hope, pride, and relief. Positive emotions provide many benefits. For example, task enjoyment helps to preserve attentional resources and focus attention on the task, promote the development of interest and intrinsic motivation, facilitate the use of flexible cognitive strategies (such as elaboration and organization of learning material), and promote self-regulation of learning, thus exerting positive effects on overall performance. Enjoyment in academic pursuits sustains interest and focus necessary for learning, with flow theory and positive emotional environments providing intrinsic motivation that leads to effective learning and performance improvement (Sharma, 2022). In this situation, students will enjoy the time and learning process they participate in class. Previous studies revealed that enjoyment can be stimulated by applying varied learning methods such as puzzle-based learning (Pranata, 2023c), game-based learning (Pranata, 2023b) or collaborative game (Chen et al., 2020), and technology-integrated learning (Pranata, 2023a; Pranata & Seprianto, 2023).

Findings related to students' negative emotion in science learning at secondary school and physics learning at high school provide important information for teachers in planning, executing, and evaluating learning. We can develop learning skills and understand social problems in our own settings, and improve our skills around how to interpret our ideas. Then the focus of learning should be returned to the students (Mayer, 2011). Thus, understanding students' conditions (knowledge, skills, attitudes, including emotions) becomes an important task for a teacher. Because fundamentally, the focus of the learning process is not about how teachers teach, but how students learn. Teachers are also responsible for addressing emotional control (self-regulation). Self-regulation is about how to monitor and manage cognitive processes as well as the awareness of and control over one's emotions, motivations, behavior, and environment as related to learning (Nilson, 2013).

#### 4. CONCLUSION

The findings shows that the overall level of students' negative emotions is in the moderate category. Shame, anxiety, and boredom are dominant negative emotions experienced by students in learning science and physics. The average level of negative emotions is slightly higher for secondary school students in science learning compared to high school students in physics learning. This average difference is not significant. However, specific emotions show significant differences based on individual statements. Secondary school students experience higher levels of shame and anxiety in science learning. Others negative emotions (such as dissatisfaction and fear) found greater experienced by students in physics learning. The findings highlight the need for interventions to

address students' emotional challenges, which promote students' engagement and confidence in science and physics learning.

Future studies should explore the students' emotion in science and physics learning in others context and interventions, such as specific instructional methods, classroom interaction, laboratory activities, test, or outreach. Research could also investigate the effectiveness of various pedagogical strategies (technology-enhanced learning, collaborative activities, and emotional intelligence training) in reducing negative emotions and promoting positive emotions in science and physics classrooms. Additionally, how students' emotions evolve over time and their long-term impact on academic achievement and motivation should also explore in greater detail through longitudinal studies.

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## APPENDIX

Table 6. Mann-Whitney U test Result

Statement	Group	Mean	Median	Mean Difference	U	$\rho$
<b>Statement 1</b>	Secondary School	1.528	1	<b>-0.89</b>	<b>1220</b>	<b>&lt; .001</b>
	<b>High School</b>	<b>2.418</b>	<b>3</b>			
<b>Statement 2</b>	<b>Secondary School</b>	<b>3.438</b>	<b>4</b>	<b>0.513</b>	<b>3798.5</b>	<b>0.002</b>
	High School	2.925	3			
<b>Statement 3</b>	<b>Secondary School</b>	<b>2.483</b>	<b>3</b>	<b>0.573</b>	<b>3834.5</b>	<b>0.001</b>
	High School	1.91	1			
<b>Statement 4</b>	<b>Secondary School</b>	<b>3.022</b>	<b>3</b>	<b>0.335</b>	<b>3510.5</b>	<b>0.041</b>
	High School	2.687	3			
Statement 5	Secondary School	2.663	3	-0.053	2853.5	0.632
	High School	2.716	3			
Statement 6	Secondary School	2.64	3	0.133	3250	0.321
	High School	2.507	2			
<b>Statement 7</b>	Secondary School	1.539	1	<b>-0.565</b>	<b>1866.5</b>	<b>&lt; .001</b>
	<b>High School</b>	<b>2.104</b>	<b>2</b>			
<b>Statement 8</b>	<b>Secondary School</b>	<b>2.719</b>	<b>3</b>	<b>0.525</b>	<b>3771</b>	<b>0.003</b>
	High School	2.194	2			
<b>Statement 9</b>	Secondary School	1.73	2	<b>-0.539</b>	<b>1975</b>	<b>&lt; .001</b>
	<b>High School</b>	<b>2.269</b>	<b>2</b>			
Statement 10	Secondary School	2.91	3	0.134	3121	0.599
	High School	2.776	3			
<b>Statement 11</b>	Secondary School	3	3	<b>-0.821</b>	<b>1814</b>	<b>&lt; .001</b>
	<b>High School</b>	<b>3.821</b>	<b>4</b>			
Statement 12	Secondary School	2.809	3	0.167	3080	0.704
	High School	2.642	3			
Statement 13	Secondary School	2.787	3	0.19	3168.5	0.474
	High School	2.597	3			
<b>Statement 14</b>	Secondary School	1.831	2	<b>-0.691</b>	<b>1703.5</b>	<b>&lt; .001</b>
	<b>High School</b>	<b>2.522</b>	<b>2</b>			
<b>Statement 15</b>	<b>Secondary School</b>	<b>2.809</b>	<b>3</b>	<b>0.466</b>	<b>3682</b>	<b>0.008</b>
	High School	2.343	2			
<b>Statement 16</b>	<b>Secondary School</b>	<b>2.854</b>	<b>3</b>	<b>0.675</b>	<b>3982</b>	<b>&lt; .001</b>
	High School	2.179	2			
<b>Statement 17</b>	Secondary School	2.202	2	<b>-0.723</b>	<b>1809</b>	<b>&lt; .001</b>
	<b>High School</b>	<b>2.925</b>	<b>3</b>			
<b>Statement 18</b>	<b>Secondary School</b>	<b>2.045</b>	<b>2</b>	<b>-0.851</b>	<b>1476.5</b>	<b>&lt; .001</b>
	High School	2.896	3			
<b>Statement 19</b>	<b>Secondary School</b>	<b>3.067</b>	<b>3</b>	<b>0.455</b>	<b>3601.5</b>	<b>0.019</b>
	High School	2.612	3			
<b>Statement 20</b>	<b>Secondary School</b>	<b>2.989</b>	<b>3</b>	<b>0.676</b>	<b>4042.5</b>	<b>&lt; .001</b>
	High School	2.313	2			
<b>Statement 21</b>	<b>Secondary School</b>	<b>2.831</b>	<b>3</b>	<b>0.622</b>	<b>3984.5</b>	<b>&lt; .001</b>
	High School	2.209	2			
<b>Statement 22</b>	<b>Secondary School</b>	<b>3.079</b>	<b>3</b>	<b>0.467</b>	<b>3646.5</b>	<b>0.014</b>
	High School	2.612	3			
<b>Statement 23</b>	Secondary School	1.843	2	<b>-0.411</b>	<b>2156.5</b>	<b>0.001</b>

Statement	Group	Mean	Median	Mean Difference	U	$\rho$
	<b>High School</b>	<b>2.254</b>	<b>2</b>			
<b>Statement 24</b>	<b>Secondary School</b>	<b>3.371</b>	<b>3</b>	<b>0.431</b>	<b>3639</b>	<b>0.014</b>
	High School	2.94	3			
Statement 25	Secondary School	2.652	3	0.13	3308	0.22
	High School	2.522	2			
<b>Statement 26</b>	Secondary School	1.798	2	<b>-0.59</b>	<b>2009</b>	<b>&lt; .001</b>
	<b>High School</b>	<b>2.388</b>	<b>2</b>			
Statement 27	Secondary School	2.91	3	0.238	3329	0.187
	High School	2.672	3			
<b>Statement 28</b>	<b>Secondary School</b>	<b>2.966</b>	<b>3</b>	<b>0.354</b>	<b>3551.5</b>	<b>0.032</b>
	High School	2.612	3			
Statement 29	Secondary School	2.944	3	0.302	3433.5	0.093
	High School	2.642	3			
<b>Statement 30</b>	Secondary School	2.022	2	<b>-0.665</b>	<b>1753.5</b>	<b>&lt; .001</b>
	<b>High School</b>	<b>2.687</b>	<b>3</b>			
<b>Statement 31</b>	<b>Secondary School</b>	<b>3.09</b>	<b>3</b>	<b>0.717</b>	<b>4004.5</b>	<b>&lt; .001</b>
	High School	2.373	2			
<b>Statement 32</b>	<b>Secondary School</b>	<b>2.663</b>	<b>3</b>	<b>0.409</b>	<b>3701.5</b>	<b>0.007</b>
	High School	2.254	2			
<b>Statement 33</b>	<b>Secondary School</b>	<b>3.528</b>	<b>4</b>	<b>0.707</b>	<b>3919.5</b>	<b>&lt; .001</b>
	High School	2.821	3			
<b>Statement 34</b>	<b>Secondary School</b>	<b>2.854</b>	<b>3</b>	<b>0.347</b>	<b>3508.5</b>	<b>0.048</b>
	High School	2.507	3			
<b>Statement 35</b>	<b>Secondary School</b>	<b>3.011</b>	<b>3</b>	<b>0.787</b>	<b>4106.5</b>	<b>&lt; .001</b>
	High School	2.224	2			
Statement 36	Secondary School	2.82	3	0.044	2982	1
	High School	2.776	3			
<b>Statement 37</b>	Secondary School	1.933	2	<b>-0.574</b>	<b>2089.5</b>	<b>&lt; .001</b>
	<b>High School</b>	<b>2.507</b>	<b>2</b>			
<b>Statement 38</b>	<b>Secondary School</b>	<b>3.236</b>	<b>3</b>	<b>0.385</b>	<b>3543</b>	<b>0.037</b>
	High School	2.851	3			
Statement 39	Secondary School	3.045	3	0.299	3363	0.147
	High School	2.746	3			
Statement 40	Secondary School	2.652	3	0.115	3132.5	0.571
	High School	2.537	3			
<b>Statement 41</b>	<b>Secondary School</b>	<b>3.371</b>	<b>3</b>	<b>0.431</b>	<b>3642</b>	<b>0.014</b>
	High School	2.94	3			
<b>Statement 42</b>	<b>Secondary School</b>	<b>3.393</b>	<b>3</b>	<b>0.483</b>	<b>3723.5</b>	<b>0.006</b>
	High School	2.91	3			
Statement 43	Secondary School	3.112	3	0.306	3436.5	0.091
	High School	2.806	3			
Average	Secondary School	2.7	2.7	0.12	3314	0.234
	High School	2.58	2.6			

Significance different ( $\rho < 0.05$ ) in **bold text**