

## Health Education across Academic Disciplines (HEAAD): A Tool to Help Students Think Critically about the Risks of Excessive Cell Phone Use

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### Abstract

**Background and Purpose:** Studies have shown that teens who hypertext are at a higher risk to engage in other health risk behaviors including binge drinking, tobacco use, illicit drug use, partaking in physical fights, engaging in risky sexual behavior, and driving distracted. Interventions addressing excessive use of mobile devices have mainly focused on mobile phone use while driving. The aim is to describe the Health Education Across Academic Disciplines (HEAAD) teaching tool and implementation, which may help to educate and raise awareness of the risks associated with excessive cell phone use among adolescents and young adults. **Educational Teaching Tool:** HEAAD includes introductory activities ranging from identifying risks related to excessive cell phone use to follow-up interactive activities with examples applied across academic disciplines other than health. HEAAD targets students in grades nine through twelve and can be adapted to the college population for freshmen and sophomores enrolled in personal health and wellness classes and/or other health orientation and first year experience classes. **Conclusion:** HEAAD intends to engage students in practicing decision-making skills related to excessive cell phone use, which may be applicable to their lives. Pilot testing of HEAAD is recommended to determine its effectiveness and potential.

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### Introduction

Cell phone use is a norm in society for much of the population. However, the teen and young adult populations are a high-risk group as the excessive use seems to be much more common among these target populations. According to Madden and Lenhart of the Pew Research Center, 75% of all teens, ages 12-17, own a cell phone and 66% of those teens use their phone to send and receive texts on a regular basis (2009). Cell phones and smartphones (the most popular type of cell phone on the market) are also now replacing landlines and increasingly being used for more than making phone calls, for instance e-mail, surfing the web, editing documents, and using a variety of apps, such as social and weather apps (Environment & Human Health, Inc., 2012). It was estimated that over 60% of teens owned smartphones in 2012 reaffirming

them being an at risk population for regular and excessive use (Environment & Human Health, Inc., 2012).

### Excessive Cell Phone Use

The risks associated with excessive cell phone use seem to progress in severity of use. "Excessive" cell phone use can be defined as, "non-essential use" of a mobile device (Dhaliwal, 2013, para. 2). Some short-term and/or less severe risks associated with excessive cell phone use may include calluses on the thumbs, running into objects due to paying attention to the cell phone and not noticing obstacles in one's way, the excessive use of acronyms, such as OMG or LOL, instead of proper English, and feeling the constant need to always have the phone by one's side to check for messages (Scheff, 2012).

More severe health risk behaviors have been found with excessive cell phone use and hyper-texting. According to results from a 2010 study, teens who “hyper-text”, defined as “texting more than 120 messages per day” (Frank, 2010, para. 3), were more likely to try alcohol, binge drink, try smoking cigarettes, use illicit drugs, partake in physical fights, and engage in risky sexual behaviors including having four or more sexual partners (Frank, 2010). In addition to the co-occurring health risks associated with the aforementioned health risk behaviors, excessive cell phone users are also more likely to use their cell phone (in any manner) while driving, which can ultimately lead to their own death or injury, or death or injury to another individual. Studies analyzing the risks associated with cell phone use and driving have indicated that drivers using cell phones are four times as likely to cause a crash compared to other drivers (Richtel, 2009). Teens are a high-risk population among drivers using cell phones while driving. Wilson and Stimpson found that since 2003, there has been a steady increase of fatalities related to distracted driving among drivers 29 and younger (2010). It has also been found that each year nearly 300,000 teens are injured and over 3,000 die each year as a result of sending text messages while behind the wheel (American Council on Science and Health, 2013).

Various authors, (e.g., Campbell, 2006; Harvey & Bosco, 2011; Katz, 2011; Martinotti et al, 2011; Walsh et al, 2008; Wei & Leung, 1999) indicate that the rate of student reports of cell phone use is consistent with the symptoms of addiction and “technological addiction”, which is defined as, “excessive human-machine interactions, develop[ed] when people become reliant on the device to provide psychological benefits” (Walsh et al., 2008, p. 79). Students have reported compulsively checking their mobile phone or being unable to walk by their mobile phone without checking it (Walsh et al., 2008). Other students have reported the need for checking their phone first thing in the morning or allowing alerts to disrupt sleep (Walsh et al., 2008). Some young adults are unable to concentrate on lectures, or other material, without stopping to periodically contact a friend or family member. Students report that the

availability or unavailability of their mobile phone has the tendency to dictate their moods (Walsh et al., 2008).

### **Health Risk Behavior Intervention Strategies**

Several types of intervention strategies are used within school systems to address various health risk behaviors among adolescents with varying reports on their effectiveness depending on how specific the content is to health risk behaviors. For example, a study conducted in 2014, analyzed the effectiveness of a school-based road safety intervention program (Glendon, McNally, Jarvis, Chalmers, & Salisbury). It was found that there was no impact on the perceived risk for unsafe driving compared to the control group, with the thought that since the intervention was more general in nature, it did not focus precisely on specific risk behaviors associated with unsafe driving practices (Glendon et al., 2014). However, another study, conducted in 2014, looked at the effectiveness of universal school-based prevention programs related to alcohol use among adolescents (Strom, Adolfsen, Fossum, Kaiser, & Martinussen). Programs focusing on normative and social influences and incorporating problem-solving skills along with life skills were analyzed and it was found that although the effects were small, they were significant and positive, indicating that the interventions had a positive influence on the students’ behaviors related to the alcohol use (Strom et al., 2014). The fact that these interventions were very specific to the risky behavior associated with alcohol use among adolescents may have played a part in their effectiveness.

When looking at interventions specific to health risk behaviors related to cell phone use, several forms of interventions exist mainly to reduce the negative consequences associated with mobile phone use while driving. Studies have indicated that legislation and policies that have been developed and adjusted to enforce safer driving behaviors related to mobile phone use within vehicles tend to be effective in the short-term. However, long-term compliance and enforcement must occur to maintain the effectiveness to ultimately reduce the injuries and deaths (World Health Organization, 2011).

In spite of the effectiveness being unknown due to a lack of research, public awareness campaigns have also been put in place to raise awareness not only about the legislation, but also intending to create a social norm making driving and using a mobile device unacceptable (World Health Organization, 2011). It is evident that when analyzing the effectiveness of interventions specifically related to mobile device use while operating a vehicle is either lacking or mixed. Although these interventions are essential to assist with reducing the negative consequences associated with the behavior, they are not applied to addiction or excessive use of mobile devices in general.

### **Health Education across Academic Disciplines (HEAAD)**

HEAAD is an educational intervention teaching tool used to integrate the concept of health risk behaviors related to excessive cell phone use into various academic disciplines. HEAAD is a tool that can be used to help students critically think about the risks associated with excessive cell phone use. The idea for the teaching activities discussed in this article evolved from the concepts discussed in a health education workshop administered by the presenter, Marty Axelson. The workshop included teaching activities for challenging individual risk perceptions related to alcohol and addiction. This teaching activity was then presented at a Center for Education and Learning Technology (CELT) conference, which was modified for the HEAAD program relating to the topic of alcohol and addiction. These teaching activities were revised and further developed to address health risk behaviors and consequences related to excessive cell phone use, hyper-texting, and addiction.

**Theoretical Framework.** HEAAD is aligned with the Health Belief Model (HBM), which is one of the most widely used frameworks aimed toward explaining changes in health behavior and maintenance of those changes (World Health Organization, 2012). The activities incorporated within HEAAD are applied mainly to two of the constructs of the HBM (perceived susceptibility and perceived severity) leading the

students to identify and personalize the internal and external consequences of excessive cell phone use. The activities review personalized consequences related to engagement in excessive cell phone use (perceived susceptibility) as well as the general consequences and their severity of excessive cell phone use (perceived severity) (Sharma & Romas, 2012). Together the perceived susceptibility and perceived severity constructs create the concept of perceived threat (Sharma & Romas, 2012). HEAAD works to create a sense of risk or threat for students related to excessive cell phone use, which could ultimately stimulate a student to take action to change their behaviors and/or maintain low risk behaviors.

Previous research suggests that the repetition or cross-promotion of health messages can positively impact the effectiveness of that message to the recipient (Literat & Chen, 2013). As a result, HEAAD works to address the three domains of learning by: (1) allowing students to acquire information and facts (cognitive domain), (2) enabling the ability to build links and bridges to use this knowledge in making responsible choices (psychomotor domain), which is designed to (3) impact and influence their values, beliefs, and behavior (affective domain). Not only does the engagement within the three domains of learning across the disciplines have a positive impact related to the effectiveness of the messages provided (Literat & Chen, 2013), but research has also shown that students can benefit further from improved academic self-efficacy levels (Chang & Chien, 2015).

**Application of HEAAD to Excessive Cell Phone Use.** Using interactive teaching tools, such as HEAAD, provide knowledge and awareness strategies geared toward exact behaviors related to excessive cell phone use versus general content overviews, which tend to make it more difficult for students to relate to apply to their everyday lives (Glendon et al., 2014). HEAAD not only raises the awareness of the risks associated with the excessive cell phone use overall, as well as with the student, but also has the students apply the information to their current lives to see the impact it is

currently having and what the future may hold if the excessive behavior continues. HEAAD addresses a variety of risks associated with excessive cell phone use beyond the risks of driving distracted while using a cell phone. This allows the knowledge to be gained and applied by a wider variety of youth, including those who do not currently drive. Not only can using HEAAD have an impact on students to think critically and engage in active decision-making to ultimately reduce the risks they take in their current lifestyle and maintain this risk reduction over time, but it can also serve as a primary prevention tool within the academic setting.

### **Purpose**

HEAAD objectives meet several National Health Education Standards (NHES) (California State Board of Education, 2008; Centers for Disease Control and Prevention, 2013). This is significant because upon completion of the program, students should be able to: analyze internal and external influences that affect health; use decision-making skills to enhance health; and practice behaviors that reduce risk and promote health.

Teens and young adults have been identified as high-risk populations who tend to engage in excessive cell phone use (Environment & Human Health, Inc., 2012; Madden & Lenhart, 2009). HEAAD is a tool used to increase the exposure to health issues and raise awareness among the teens in grades nine through twelve. HEAAD also is easily adapted to incorporate into a college classroom environment. It is intended to encourage high school educators, as well as college faculty and staff, to incorporate the use of this tool within the curriculum of their courses or other health and/or personal awareness programs available to the students. A unique feature of HEAAD is that it allows for health education to be incorporated across academic disciplines such as English, math, art, music, drama, geography, and physical education. The objective of this article is to provide an outline of objectives, activities, and application examples assisting educators with the use of the HEAAD tool to raise awareness of the risks of excessive cell phone use among the students, ultimately improving the students'

decision-making skills related to the health risk behavior.

The following provides details of the HEAAD objectives and applications addressing the three domains of learning.

### **Integrating HEAAD within the Classroom Setting**

**Objectives.** After participating in the HEAAD activities, students will be able to:

1. Describe what the individualized consequences are related to excessive cell phone use and texting behaviors.
2. Describe what the consequences are related to excessive cell phone use and texting behaviors discussed within other academic disciplines.
3. Identify the differences in severity of the risks associated with excessive cell phone use and texting.
4. List short and long-term physical, social, emotional, and legal consequences related to each risk discussed.

### **Description of Educational Intervention**

**Activities.** The following activities (See Tables 1-4) guide the instructor through the process of incorporating HEAAD into a variety of academic disciplines teaching about the dangers of excessive cell phone use and texting. The activities may be conducted in a high school or college classroom setting. The four interactive educational activities can be implemented within two, 45-minute periods. Each activity may be completed on an individual basis or they can build upon each other sequentially. Materials needed for the various activities include: clean sheets of paper and a writing utensil for each student and activity; a journal for each student; one white board with dry erase markers; 36 five by seven index cards; and access to the internet for research purposes. Figures 1 and 2 are also included to assist with organizing and implementing the teaching activities. Please note that Activities 1 and 2 were modified, with permission, from a lesson plan created by Marty Axelson from the Long Beach Unified School District (Sbarbaro, Duffy, & Osterland, 2003). Activities 3 and 4 were modified from lesson

plans developed by Gast and Hodson (2000).

**Table 1.**

Activity 1 - Defining Safe and Excessive Cell Phone Use and Texting Behaviors Activity

**Purpose:** Many individuals might assume that a cell phone user or text addict is a person that is physically, psychologically, or emotionally dependent upon cell phone use and texting to communicate with another person. The point of this activity is to give students the opportunity to imagine what it feels like to be an addict.

**Objective:** The student will be able to describe what the individualized consequences are related to excessive cell phone use and texting behaviors.

**Steps:** (1) Have students complete the “Defining Safe and Excessive Cell Phone Use and Texting Behaviors” chart (See Figure 1); (2) Have the students tear each column and row along the creases putting them back in order on their desk (as they were when they were attached); (3) Each student selects one box from each column and creates a new column to the right with the four new boxes. The teacher then has the students discard all boxes from the new column. This process is repeated until there is only one box remaining for each column indicating to students that that in the real world the addict does not get to choose which parts of his/her life are lost; (4) Upon reviewing the remaining boxes have the students write in their journal about how it feels to have these parts of their lives being taken away.

**Figure 1.**

Defining Safe and Excessive Cell Phone Use and Texting Behaviors Chart\*

| Four most important people in my life | My four most important possessions (including pets) | Four activities I enjoy the most | My four most important goals |
|---------------------------------------|---|----------------------------------|------------------------------|
|                                       |   |                                  |                              |
|                                       |   |                                  |                              |
|                                       |   |                                  |                              |
|                                       |   |                                  |                              |

\* This chart may be used with Activity 1 - Defining Safe and Excessive Cell Phone Use and Texting Behaviors Activity

**Adaptation for Use with College Students.**

Along with high school teens, due to their young age being included in the target age range of the high-risk population, freshmen and sophomore

college students are also a primary group the HEAAD activities can be used with. Considering the college classroom setting may vary from high school, the implementation of HEAAD within the college setting may require

modification. The HEAAD activities (or an adaptation of them) may be conducted in personal health and wellness classes and/or other health orientation and first year experience classes. These types of classes may allow greater flexibility to apply the information and implement the activities throughout various units within the semester as well as possibly allowing for all activities to be conducted within a health risk behavior awareness unit. Classes outside of

those previously mentioned may also incorporate the material and activities in various ways. For instance, excessive cell phone use may be the data topic for a research or statistics course, or it may be used as an assigned topic for

students to research and apply course material to (i.e. develop behavior change strategies in a health behavior change course). HEAAD allows for the ease of adaptation to fit the structure of a variety of high school and college-level courses.

**Table 2.**

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Activity 2 - Defining Safe and Excessive Cell Phone Use and Texting Behaviors Follow-Up Activity

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**Purpose:** Students can have follow up information incorporated into any of the academic disciplines within the education system to reinforce health messages.

**Objective:** The student will be able to describe what the consequences are related to excessive cell phone use and texting behaviors discussed within other academic disciplines.

**Steps:** Application examples across the disciplines:

(1) **English:** Write an essay on what the consequences are related to excessive cell phone use and texting risk behaviors; (2) **Math:** Incorporate statistics related to excessive cell phone use and texting behaviors into critical thinking math problems; (3) **Art, Music, Drama:** Create an inspiring mural with a message to abstain from hyper-texting and the overuse of other cellular/technological devices; (4) **Geography:** Research adolescent accidents and deaths related to risky cell phone use and texting behaviors within their high school, community, county, and state. This information can then be compared to other schools, counties, and/or states; (5) **Physical Education:** Discuss short and long term consequences related to excessive cell phone use and texting including physical, social, emotional, and legal risks.

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**Table 3.**

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Activity 3 - Risk Severity Continuum Activity

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**Purpose:** Once there is a greater understanding of the severity of the risks and consequences of excessive cell phone use and texting, students will need to be able to apply this to their lives to understand why they, or others, may choose to engage in the mentioned risky behaviors.

**Objective:** The student will be able to identify the differences in severity of the risks associated with excessive cell phone use and texting.

**Steps:** (1) After dividing the students into four groups, the teacher will give each group a set of identical cards with specific behaviors or perceptions on each card. Examples of risky behaviors and perceptions may include: cell phone use and texting while operating a car or bicycle, sharing embarrassing cell phone use, text information, and photos with others, everyone is “doing it”, and I’ll only do this once, it can’t happen to me. (2) Have each of the four groups of students form a line from the least risky behavior/perception to the most risky behavior/perception. (3) Each group of students will stand across from another group of students and will compare the order of their cards, then discuss the rational and differences related to risky behaviors associated with excessive cell phone use and texting.

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**Table 4.**

Activity 4 – Short and Long-Term Consequences of Excessive Cell Phone Use and Texting Risk Behaviors

**Purpose:** Along with identifying what the risks are associated with excessive cell phone use and texting, it is important for students to comprehend the severity of the risks and consequences of the behavior.

**Objective:** The student will be able to list the short and long-term physical, social, emotional, and legal consequences related to each risk discussed.

**Steps:** (1) Discuss the concepts of relative risk and risk taking while using a white board to write examples of helpful risks and harmful risks. (2) Have the students discuss whether a risk varies when a behavior occurs only once versus a habitual behavior. (3) Using the “Risks Associated With Excessive Cell Phone Use and Texting” (See Figure 2), have the students list the short and long-term consequences of different types of risks associated with excessive cell phone use and texting.

**Figure 2.**

Risks Associated With Excessive Cell Phone Use and Texting\*

| Risks           | Short – Term Consequences | Long – Term Consequences |
|-----------------|---------------------------|--------------------------|
| Physical Risks  |                           |                          |
| Social Risks    |                           |                          |
| Emotional Risks |                           |                          |
| Legal Risks     |                           |                          |
| Other Risks     |                           |                          |

\* This chart may be used with Activity 4 – Short and Long-Term Consequences of Excessive Cell Phone Use and Texting Risk Behaviors

**Assessment**

The instructor assesses students using the four objectives as criteria listed within the Assessment Rubric (See Figure 3). The instructor may also use the same rubric to analyze the quality and effectiveness of the work completed by the students. The first activity, “Defining Safe and Excessive Cell Phone Use and Texting Behaviors Activity”, is assessed by the instructor analyzing the completed journals indicating how students felt if parts of their lives were being taken away from them due to participating in the excessive cell phone use and texting behaviors. The second activity, “Defining Safe and Excessive Cell Phone Use and Texting Behaviors Follow-Up Activity”, is assessed by having the students provide at least

one example of the impact of risky behaviors within the discipline of focus to the instructor. The “Risk Severity Continuum Activity” is assessed by the instructor determining if students are able to support their statements prioritizing the risk behaviors related to excessive cell phone use and texting by severity. Finally, for the “Short and Long-Term Consequences of Excessive Cell Phone Use and Texting Risk Behaviors Activity”, the instructor may confirm that each student has completed the chart listing out the short and long-term consequences related to the physical, social, emotional, and legal risks associated with excessive cell phone use and texting behaviors.

Although HEAAD focuses on risk behaviors related to excessive cell phone use and texting and can be implemented in the classroom, it has

not been pilot tested to date and only has been completed as a workshop at the CELT in October of 2014.

**Figure 3.**

Assessment Rubric\*

| <u>Objective</u>   | <u>Excellent</u><br><b>5 points</b>   | <u>Satisfactory</u><br><b>3 points</b>  | <u>Needs Improvement</u><br><b>1 point</b>   |
|--|---|---|--|
| <b>Describe what the individual consequences are related to excessive cell phone use and texting behaviors.</b>                                  | Response clearly follows assignment directions. Effectively described individual consequences related to excessive cell phone use and texting behaviors                         | Moderately effective describing individual consequences related to excessive cell phone use and texting behaviors                         | Limited effectiveness in describing individual consequences related to excessive cell phone use and texting behaviors                            |
| <b>Describe what the consequences are related to excessive cell phone use and texting behaviors discussed within other academic disciplines.</b> | Response clearly follows assignment directions. Effectively described consequences related to excessive cell phone use and texting behaviors associated with chosen discipline  | Moderately effective describing consequences related to excessive cell phone use and texting behaviors associated with chosen discipline  | Limited effectiveness in describing the consequences related to excessive cell phone use and texting behaviors associated with chosen discipline |
| <b>Identify the differences in severity of the risks associated with excessive cell phone use and texting.</b>                                   | Response clearly follows assignment directions. Effectively discussed rationale and differences related to risky behaviors associated with excessive cell phone use and texting | Moderately effective discussing rationale and differences related to risky behaviors associated with excessive cell phone use and texting | Limited effectiveness in discussing rationale and differences related to risky behaviors associated with excessive cell phone use and texting    |
| <b>List short and long-term physical, social, emotional, and legal consequences related to each risk discussed.</b>                              | Response clearly follows assignment directions. Effectively listed short and long term physical, social, emotional, and legal consequences                                      | Moderately effective listing short and long term physical, social, emotional, and legal consequences                                      | Limited effectiveness in listing short and long term physical, social, emotional, and legal consequences   |

\* The instructor may use this rubric to analyze the quality and effectiveness of the work completed by the students

After the completion of the workshop, the health educators indicated that they would like to implement these activities into their curriculum. At a later date, health educators, as well as educators in other academic disciplines, had identified that they implemented the activities used by HEAAD in their curriculum. They reported back, anecdotally, that the activities incorporated with HEAAD enhanced engagement and interaction throughout the classroom, expectantly leading to the positive effect on the students' self-efficacy (Chang & Chien, 2015) and improved critical thinking and decision-making skills used to partake in positive health behaviors.

### **Implications and Future Research**

Cell phone use and texting is now a social norm and may be a part of the lives of many secondary school students and the college population (Environment & Human Health, Inc., 2012). These interactive teaching activities are designed to provide a base knowledge related to the risks of excessive cell phone use and to engage students in practicing decision-making skills that are potentially relatable to their lives. Teachers and health education specialists may utilize these interactive skill-based teaching activities to engage students aiming to decrease and avoid cell phone use and texting behaviors that contribute to negative consequences (i.e. poor social interaction, vehicular accidents, feelings of loneliness or emptiness, anxiety, irritability or sleeplessness (Dhaliwal, 2013; Wilson & Stimpson, 2010); and increase healthy cell phone use and texting behaviors that contribute to positive effects for personal health (i.e. enables contact with loved ones, ease of planning/scheduling the daily routine, improves productivity and saves time, may improve safety in emergency situations; may enhance engagement and education (Walsh et. al.,2008).

This process has allowed a determination that educational interventions specific to excessive

cell phone use and/or addiction are few and far between, other than simply understanding the signs of addiction (Scheff, 2012). Evaluation of HEAAD would further contribute to the literature available helping to understanding individuals' behaviors related to excessive cell phone use and texting along with their ability to make a change to reduce their risky behaviors and sustain it. School-based health risk behavior interventions, focusing on specific health topics and populations, tended to show a positive impact on the students (Strom et al., 2014). Long-term evaluation of the impact of implementing HEAAD into the academic setting may further support this technique. Using this teaching tool among the high risk population of teens and young adults, who engage in excessive cell phone use, may assist in the reduction of the various health consequences, including death, due to risky behaviors associated with excessive cell phone use and texting. To further study and evaluate the effectiveness of HEAAD, competency may be determined through an evaluation process including the administration of pre-test and post-test surveys.

### **Conclusion**

The purpose of HEAAD is to be used as a tool in the classroom to engage students to think critically about their health and risky behaviors related to excessive cell phone use. By integrating HEAAD into various curricula, students will be allowed multiple opportunities to analyze the severity of risks associated with the behavior in relation to their personal lives. The implementation of this tool, along with continued analysis assessing its effectiveness, may assist in improving the quality of life of teens and young adults by providing the knowledge and skill necessary to reduce excessive cell phone use. It may also add to the current interventions and literature, providing information regarding decreasing risky behaviors, specifically with excessive cell phone use, among the target population.

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