

Multitasking and Smartphones usage in the Classroom and During Instruction Affect Attention and Therefore Impact
Second Language Acquisition Among High School Students

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Research Report submitted in partial fulfillment of the requirements for the degree of Master in English Language
Teaching – for Self-Directed

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Chía, Colombia

October 2022

Introduction

It is paramount to understand the relationship between multitasking, smartphone usage, and the impact on attention and Second Language Acquisition as of now, in the classroom, and the impact that it may have on academic performance among High School students. Is it possible to multitask in the classroom by attending the smartphone and the teacher's speech simultaneously? The notion of High School students is that they can do two or even three tasks simultaneously. Students believe that they can attend to their smartphone; read and write text messages, talk to his/her neighbor, and pay attention to instruction, which is starting to become the new trend nowadays (Dhanasekaran et al., 2017). It is unseemly to be aware of all these distractions which means a switch of actions that ultimately affects learning (Chen & Yan, 2016). Technological devices such as laptops, tables, and specifically smartphones present educational opportunities, however it can also create learning problems, (Junco, 2012). Explicitly, multitasking with smartphones can interfere with learning process (Sana et al., 2013), attention is affected when switching actions instantly such as reading, and writing text messages on the smartphone, and then paying attention to instruction at the same time. However, it is not possible to do both actions (Schmidt, 2001), and even three actions simultaneously; students need to put on hold one action to start another. In this case specifically to read a text message even in fractions of a second requires full attention and at the same time to write a text message in seconds requires full attention, therefore, attention to instruction is put on hold. It would be unlikely

to perform both actions simultaneously (Schmidt, 1995), still, the notion of multitasking is most likely to be believable among students.

This article presents results of misconceptions surrounding smartphone addiction that to a certain degree is reflected by students' habits of multitasking in the classroom. Smartphones have unlimited and sophisticated functions that are difficult to ignore (Shin et al., 2011), the need to be entertained, to communicate, to be informed makes it difficult to put them away. Smartphones have changed the way people behave in daily life. Multitasking with smartphones is part of it; therefore, it has influenced every aspect of life such as the way students behave in the classroom, in the school, and at home, students have become more dependable on these devices to communicate and be informed of social media news (Shin et al., 2011), smartphones is part of students most precious personal belongings.

Smartphones have become the new normal way of coexisting and communicating with one another everywhere. These smartphones have created a myriad of opportunities for people than ever before, it was unthinkable, to have such a powerful device with so much knowledge or information in the palm of your hands, while creating the illusion of having a portable fancy library in your pocket. If students use smartphones both inside and outside of the classroom wisely with balance and responsibility, it can take the development of autonomous learning to a new level, (Ramamurthy & Rao, 2015). In a long-term run, it helps students to be independent learners by using the device for academic enrichment. The habit of multitasking develops by students when manipulating their smartphone in class, or when they are studying or doing homework affects attention, one action must be performed at a time, and other actions must put on hold (Schmidt, 1992). It is not possible to

devote full attention to homework and the smartphone, and to study and attend the smartphone simultaneously. The smartphone becomes a distraction when checking or sending text messages, it interferes while studying or doing homework. It creates a dependency that eventually leads to addiction, (David et al., 2015). This habit of continuously multitasking during class and out of class with certain frequency is a challenge in the classroom or when students are doing academic work. Consequently, Students who are deficient in self-regulation; in terms of manipulating the device or with a tendency for addiction may face challenges in controlling the choice of multitasking strategically (David et al., 2015), if students fail to control or regulate their multitasking habits with smartphone usage, it can affect attention in the classroom.

This article intends to research, how much the addiction of being informed, entertained, or communicated to with others by multitasking with smartphones use in the classroom affects attention? It also wants to show how much multitasking with the smartphone in the classroom diverts attention and impacts the way students acquire information or knowledge that is disseminated in the classroom by the teacher. Additionally, two main objectives this project intended to present: the first one is “To recognize how multitasking in the classroom with smartphones during instruction affects attention” and the second one is “to illustrate that frequent smartphone checking deviates attention from instruction.” The new habit in the classroom to check the smartphone with certain frequency may create gaps in the way students understand the lesson and it may impede learning (Grinols & Rajesh, 2014), and most importantly, it can be reflected in low academic performance.

The rationale for undertaking this study was the strong eagerness to get a deep understanding of the relationship between the manipulation of the smartphone in class which is translated into multitasking and how it affects attention. Switching from one task to another makes it difficult to get focused, multitaskers think that they are good at balancing each task. However, the time that they spend switching from one task to another makes their attention get distracted from instruction. Every time in the switching of actions, eventually, one action must be put on hold even if it is for a fraction of a second, to perform another action, this gap of time of unattended to instruction, may create a gap in the lesson for the student. Still, that fraction of a second it takes to change tasks could mean life or death for someone driving in a highway while trying to send a text message or read a text message or even trying to find a good radio station. It is not possible to pay actual attention to two cognitive actions simultaneously (Schmidt, 2010a) without putting one on hold while performing another action, for example, reading and writing text messages, and paying attention to instruction. To read a message on the smartphone, attention to instruction must be put on hold, and to write a text message on the smartphone, attention to instruction must be put on hold (Schmidt, 2001). Either way attention is diverted from one task to another when multitaskers want to switch actions swiftly. It is disputable that less quality attention is given to each task and margin for error increases in performing each task (Schroder et al., 2012). Yet, one task must be unattended or put on hold while performing another task, it is quite impossible to attend at both tasks simultaneously (Robinson, 1995a), not only one cognitive action is performed, but another is put on hold.

There is no doubt that smartphones, have tremendous benefits in terms of abilities to gather information and to communicate instantly in a global network, and certainly, smartphones have great advantages for learning purposes in the classroom and out of the classroom (Kibona & Mgaya, 2015). However, nowadays in the classroom smartphones have become a conundrum for teachers to get students to exercise common sense when using smartphones for learning, and when to put them away when speeches, lectures, note-taking, and when taking tests demand undivided attention. This article intends to emphasize the importance of understanding the relationship between the noticing hypothesis (attention) versus smartphone multitasking (usage-addition) that eventually creates a quiet disruption and distracts students in class, it may lead to gaps in the way students understand the information that is presented in the classroom and may lead to low academic performance (Junco, 2012) in high school students or even college students.

In short, the problem of smartphone addiction which is reflected in abusing the use of the smartphone device by the constant multitasking activity is a reality in the classroom nowadays, the need for clarity and understanding of its effects is crucial to improve our teaching practice and thus to find ways to utilize or include this device in classroom activities (Thomas, 2016). However, this study focuses on the rationale of understanding the notion of attention or noticing (consciousness or even awareness) or attending, in this case to the lecture or lesson presented in the classroom and how the usage; specifically multitasking of smartphones meddles adversely impacts learning. The need to understand why students get so distracted with their smartphones (David et al., 2015) and the cognitive consequences it may have when students are switching tasks to attend different applications on their

device while paying attention to instruction in the classroom due to the behavior of multitasking is the main motive of this research

Literature review

It is very hypercritical to determine the probable cognitive impacts of smartphone affiliated habits related to usage in the classroom (Wilmer et al., 2017). When smartphones are used wisely, they can increase knowledge as well as good display of autonomous learning (Ramamurthy & Rao, 2015), students can benefit from using them. However, there is a growing concern that habitual manipulation or involvement with smartphone usage might have a negative and lasting impact on user's ability to think, remember, pay attention, and regulate emotions (Wilmer et al., 2017). Yet, a smartphone is a great device to own, (Stats & Anderson, 2015) regardless of the risk of getting addicted (Haug et al., 2015). It became a necessity for everyone regardless of age, sex, race, and social status. The need to communicate instantly with others for work, academy purposes or personal reason are a necessity. The need to check messages, post messages or photos on social media is the new norm, definitely, smartphones have changed our lives forever (Marques, 2016), it makes us more dependable on these electronic devices to fit in and be informed.

Smartphones have narrowed the digital divide regardless of social class (Brown et al., 2011), in the U.S. teenagers from unprivileged families own a smartphone device and they have access to the internet and computers at school Woodcock, Middleton, & Northcliffe, 2012. Most adolescents in U.S own a smartphone, about 68% in 2015 (Becker, 2000; Stats & Anderson, 2015). These stats mean that soon most students in High School will own a smartphone, as almost 90% of Americans adults own a

smartphone nowadays (Odom, 2015), eventually the access to own a smartphone will get easier and more affordable.

These days most Millennials students access more online content on their smartphone than desktop computers. In addition, the use of smartphones in the classroom is a new field of study which is known as mobile learning or M-learning. Mobile learning can be defined as anytime, anywhere learning using smartphones (Odom, 2015) to enhance academic knowledge.

Using a smartphone to learn is becoming quite normal for new generations of students, however, it brings new challenges for educators and for students to exercise self-control. Smart phone use and multitasking in the classroom is related to distraction, distractibility, and impulsivity (Levine et al., 2012). Engaging in social media or multitasking use with the smartphone device while trying to follow instructions in class, may reduce learner's capacity for cognitive processing causing low academic performance (Demirbilek & Talan, 2018). This continuous use of smartphones also has different effects on media multitasking, on driving, walking, work, and academic performance when usage is abused. Most importantly, it has effects on attention, divided attention, distraction, (Levine et al., 2012). Smartphone abuse of usage or addiction is related to distracting with consequences for safety, efficiency, learning (Levine et al., 2012), and psychological effects such as depression (Demirci et al., 2015), sleep disorders and anxiety.

The flow of free knowledge and the trend of open resources makes mobile learning a fascinating technological development and potentially a major educational tool (Hylén & Schuller, 2007). It also makes it difficult for educators to control the use of smartphones in the classroom because multitaskers may become more skilled at manipulating their smartphone over time. However,

intervention may be needed to improve the safe and effective use of the device, this is one of the main challenges for educators. Creating new intervention courses about the effective use of smartphones in class and out of class, and how to enhance mobile learning, and autonomous learning by utilizing smartphones in the classroom is a new area with multiple opportunities for students (Woodcock et al., 2012). Still, smartphone usage in the classroom faces tremendous challenges for teachers, and researchers. The idea is to align the new advances of technology, and the new generations of multitaskers to a balance and self-regulation by strategic and detail school intervention executed by teachers in the classroom (Dillenbourg et al., 2009) to help students who may get addicted to smartphone usage.

Multitasking and Smartphone learning

Smartphones have eventually created a new norm of acting in business meetings, in social media events, and in school. Businesspeople can attend a virtual meeting using their smartphone anywhere, any time. People in general can publish and check events on their smartphones at any time which is faster than ever before. Students can use their smartphone to learn, mobile learning, at their own convenience time. They can have access to video courses, lectures, podcasts, blogs, articles, and e-books, and unlimited resources, most of them free of cost, and at any time. All these freebies were not possible a few generations ago, people had to go to libraries or register courses at educational institutions to have access to these resources. Most importantly, smartphones have innovated the way educators teach and students learn. If students take advantage of all these free resources online, and if they take control of their own learning (Benson, 1996) by using their smartphone wisely, then, e-learning will be the way to go, teachers may be teaching remotely. Present mobile devices and future

mobile devices will meet educational needs for students with a more technological mind set and for a future that will be far more intertwined with mobile technology and education (Learning, 2012).

These smartphone devices enhance learning and produce new educational products that at some point increase quality and access of education for all.

Smartphone learning or mobile learning is enhancing virtual and self-directed learning (Soloway et al., 2011), students have access to a myriad of resources online that can be accessed by using their smartphone anytime anywhere (mobile learning). Yet, educators are rethinking new ways of utilizing technology, and specifically smartphones in the classroom, and they are still asking how we can move the conversation from banning these powerful tools in the classroom to using them to promote and enable student engagement and achievement (Woodcock et al., 2012) in the classroom and out of the classroom.

Students are pretty tech-savvy these days and at the same time more dependable on smartphones, they are more adept at multitasking by manipulating the electronic device more skillfully and more frequently. The behavior of social expectation of constant connection that requires multitasking to achieve (Ames, 2013), it is the new norm nowadays. In the classroom multitasking is reflected by sending texts, reading texts, and paying attention to class simultaneously, this is how students make sense of their smartphones in their everyday technosocial assemblages.

These tasks of switching to attend the smartphone, surf applications, scroll down to read messages affect attention (Schmidt, 2001; "The Myth of Multitasking," 2007); therefore, attention is divided between the smartphone's applications and instruction. In this case, one action must put on

hold, to perform another action, for example attention vs instruction, instruction is on hold while reading or writing text messages on the smartphone takes most important consideration.

Smartphone have multitasked functions, therefore it creates the illusion or notion that smartphone users are multitasking as well (Wang & Tchernev, 2012). Previous studies show that multitasking is a myth, one task can only be performed by putting another task on hold. Rosen (20018) argues that managers who handle several projects at the same time, only will be effective if they manage each project meticulously (Van Deursen et al., 2015). If they manage each project; one project at the time, meticulously, well organized, and by minimizing switchovers from project to project, they are more accurate and effective. Sana, Weston, and Cepeda (2013) show how students who multitask during lectures in their laptops performed lower in a test than those who did not multitask and participated in classroom discussion (Sana et al., 2013). Switching tasks due to habitual smartphone behavior use is an important contributor to additive smartphone behavior and multitasking (Van Deursen et al., 2015). Furthermore, negative effects of multitasking by the constant connectivity (Ames, 2013), makes it more difficult for multitaskers to exercise self-control. Every day there are huge volumes of data with high velocity and high variety that comes to the phone via internet (Anshari & Alas, 2015), it brings plenty of information of different topics that is attractive to all kinds of multitaskers, and the need to stay connected with others wherever we are, make multitaskers, specifically students become faster multitaskers. Students who use their smartphones in daily activities, in school, at home, at work, and in social events, create multitasking habits. They get used to reading and writing text messages, check social media while in class and while they attend to lectures or instruction at the same time. Consequently, multitasking by smartphone usage is connected

to addiction and it brings psychological problems to the student such as addiction to the use of smartphone, compulsive behavior, and psychological stress(Lee et al., 2014). These elements have a direct relationship in terms of the user and the device. Most importantly, educators see how this behavior of smartphone use and abuse is reflected in the classroom in these times. The multitask behavior that students display as smartphone users is that they are getting used to sending and receiving text messages, watching videos, and even playing video games while they attend to instruction during class time. However, smartphones enable students to develop new skills and literacies such as texting, moblogging such as writing diaries and weblogs by using mobile devices, as well as mobile video creation, for a new generation (Sharpley et al., 2010), smartphones have positive and negative impact on students depending on how students utilize these devices for learning.

Multitasking and noticing hypothesis

This addictive behavior of sending and receiving text messages, checking e-mail messages, and scrolling down on applications searching for information by multitasking on the smartphone will probably impact the quality of attention in the classroom (Giunchiglia et al., 2018), and it is believed that to a certain degree it will probably influence what students notice and attend in the classroom (Johnson & Proctor, 2004). Students are exposed to input; that is produce by classroom instruction, knowledge that is imparted by the teacher, exchanges, and participation in class, however, if distractions occur by using the smartphone and by surfing different applications at the same time, the output that the student can generate that is essential for learning may be impacted since conscious attention is compromised (Uggen, 2012).

Schmidt's (1990) views consciousness in the "noticing hypotheses" on one hand can be seen in different dimensions such as awareness, attention, and knowledge. On the other hand, consciousness is in most cases associated with awareness. As Schmidt (1994) claims that awareness has different levels or degrees including noticing and understanding. In addition, he states that noticing requires focal attention, in contrast, understanding means we can

"Analyze, compare, reflect comprehend." Finally, Schmidt states that without attention there would be little learning or no learning of new linguistic material, therefore attention is needed for all learning. In the "limited capacity theory of media processing" which is a fusion that finds its origins in the psychology of understanding cognitive information processing. It assumes that humans have a limited capacity for cognitive 'finite' processing of information (Lang, 2000) as it associates with mediated messages variables (encoding, storage, retrieval), according to the theory this is how the information is presented to the brain. Messages can be processed under controlled conditions, or they can be automatically elicited. As the demand for this resource increases, tasks performance will decrease (Lang, 2000). For instance, watching a television program while doing homework, it can hurt homework performance because of cognitive overload (David et al., 2015), attention is limited to one task at the time, therefore, there will not be 100% cognitive attention to either the T.V program or the homework. If attention is divided during switching multitask actions, attention will be compromised, and the message will be compromised as well, attention demands central route processing (David et al., 2015). If attention is compromised it would be critical to capture information with many distractions or interruptions by multitasking with the smartphones in the classroom, and it

has become a real challenge for students to exercise self-control when manipulating the device in class.

At this point, it is fair to wonder if smartphones enhance learning or impede learning or if learning is elusive when multitasking is undertaken during actual instruction. Schmidt (2001) claims that “people learn about the things they attend to and do not learn much about the things they do not attend to,” the author also argues that attention needs to be specifically directed. As he put it, “nothing is free.”

One of the puzzles nowadays for teachers in the classroom is to determine if students pay attention to their lectures. Most importantly how much do students notice when instruction is in progress, since distractions in the classroom are numerous, such as sending and receiving text messages, checking media gossips, watching videos clips, and playing video games, attention is compromised and divided.

Students depend on smartphone devices to the point that lacking hands on skills, and the reduce quality of social interaction or face to face interaction are new challenges for teachers (Anshari et al., 2017). High school and college students are more distracted than ever before, they gravitate to check their smartphone on an average of 11.43 times during class for non-classroom activities, a solid 12% do texting, emailing, checking the time or other activities more than 30 times a day (Schaffhauser, 2016). Creating specific rules of using smartphones in class before teaching, students must follow those rules to avoid or minimized the number of disturbances or disruptions with smartphones. In this respect, it is still difficult for teachers in the classroom to monitor students who are multitasking back and forth on their smartphones, not only by attending their smartphones, but

also to paying attention to instruction. It is extremely difficult to monitor the behavior of using the smartphone in class while lecturing without stopping or disrupting instruction.

Schmidt (1990) the main proponent of the noticing hypothesis states that when students attend to something or they notice or are aware of something, and most specifically instruction, this action of attending, paying attention is crucial for learning, and it is totally related to it, attention basically plays a role in all learning, therefore, every time students check their smartphone devices, they may not be aware of what is happening in the class at that precisely moment.

Attention, noticing, and awareness are often treated as synonyms, for example if you are conscious of something, then you are attending to it, and if you are attending to it, then you are conscious of it (Truscott & Smith, 2011). There is the view or belief that attention, awareness, and consciousness are inter-related with noticing and that they are at the same or similar level to the definition of attention, (Robinson, 1995b), therefore, multitasking may impact attention in the classroom, due to the many times students check their smartphone in class. Because attention is so important for learning, it needs alertness, orientation, and detention (Tomlin & Villa, 1994) where alertness represent a general readiness to deal with incoming stimuli and orientation refers to specific aligning of intention, for instance, language form and meaning. Detention is the cognitive registration of sensory stimuli, detected information is available for other cognitive processing. If students are not aware of the information that the teacher is transmitting while they are attending their smartphone even for a few seconds, the information that they miss when away may impact the information that they grasp when they come back to attend instruction. And if students are going back and forth to check their smartphones multiple times during class, then all those seconds away from instruction add

up and it may create gaps in the information that students may be able to detect to for their cognitive processing.

Schmidt argued that focal attention and awareness are essential isomorphic, and that a causal role for subjective experience in learning cannot be rule out, in contrast Tony and Villa (1994) argued that detention and further processing of stimuli can be dissociated from awareness of what is attended to, and that detention (not awareness) is what is important. A great understanding of Schmidt's definite is that focal attention and awareness is needed for learning and are at the same level. If students are not conscious that the behavior of multitasking by using their smartphone in class stop them from being aware and focus to instruction, and that attention is certainly paramount for learning, students will eventually miss instruction, they will encounter significant consequences and gaps in the way they acquired information.

The 'noticing hypothesis' (Schmidt, 1995) states that what the learner notices in input becomes intake for learning. A further extension of the hypothesis argues that attention is required for all learning, it is that what must be attended to is not just input from one channel as opposed to another or stimuli important to one task as opposed to another, but also different features of the same input (Schmidt, 2010b). A reflection about this concept of attention by Schmidt (1995) and by making the connection between the noticing hypothesis and the reality of smartphones users

in the classroom, it is possible to say that the quality of attention is compromised by multitasking with the smartphone device in the classroom. If two actions are happening simultaneously such as attending the phone and paying attention to instruction, since the brain processes one task at the time, therefore the amount of attention for each task will probably decrease

and therefore it will be divided. It is in this specific situation when attention is compromised. In this respect, the myth of multitasking succumbs. This is the misconception surrounding smartphones and multitasking. It would be difficult for students to be able to be multitasking by manipulating the device to write text messages, read text messages, watch videos, or play video games, and simultaneously pay attention to ongoing instruction, in the noticing hypothesis this is a very unlikely possibility without stopping one action to perform another.

The noticing hypothesis also claims (Schmidt, 1992) that awareness at the point of learning (time1) is required for all learning. If there is not awareness during the process of learning (instruction; time 1), it would be very unlikely to assess it a later point (time 2). If students are not aware during instructional time (time 1), it would be very difficult to say impossible to assess knowledge later after instruction (time 2), there would be a direct correlation of lack of awareness in time 1 with lack of awareness in time 2, therefore awareness (attention) is required for all learning (Schmidt, 2010).

In addition, the noticing hypothesis claims that learning requires awareness at the time of learning, however, it does not require that memory of that event be preserved, much less recalled each time the learned material is encountered (Robinson, 1995a). This important point that attention and awareness is a prerequisite for learning, therefore, applying this concept in the classroom with students who are multitasking switching back and forth from checking on their smartphone their text messages or applications multiple times, and then, paying attention to class, if they are asked a simple question of something said while they were on their smartphones, the chances are that they might not

know the answer because they put on hold attention to instruction and missed information while they were on their devices even for a few seconds.

One of the main pillars of the noticing hypothesis is that consciousness is good for learning and that learning, and awareness are perfectly correlated. Schmidt (1994) uses ‘noticing’ to mean conscious registration of the occurrence of some event, whereas ‘understanding,’ implies recognition of a general principal, rule, or pattern. Noticing refers to surface level phenomena and item learning, while understanding refers to deeper level of abstraction related to semantic, syntactic, or communication, (Robinson, 1995a). If learning and awareness are correlated therefore multitasking in the classroom hurts noticing, consequently it may hurt learning as well, unless students exercise self-control and put their phones away during real instruction to understand the materials.

An example of attention in a foreign language means vocabulary learning, conscious registration of the form (phonological or orthographic) of a word is an example of noticing. Knowing the meaning of a word and knowing its syntactic privileges of occurrence (other than in collocations and fixed expressions) are matters of understanding. In morphology, awareness that target language speakers say on an occasion, “he goes to the beach a lot,” is a matter of noticing. Being aware that goes is a form of go inflected for number agreement is understanding. In syntax, awareness that on some occasions speakers of Spanish omit subject pronouns is a matter of noticing (Robinson, 1995b). In the real classroom not only paying attention but avoiding disruptions such as multitasking with the smartphone may help noticing, attention, and therefore learning.

In short, in a switching multitask operation with attention, instruction, and smartphone manipulation neither task receives full attention. It is ultimately up to the student to regulate the usage

and start taking responsibility for controlling this multitasking habit. It is possible to say that undivided attention during instruction is needed for learning. In the meantime, more research is needed to untangle the conundrum of attention in relationship with smartphones versus multitasking.

State of the Art

The noticing hypothesis (Schmidt, 1995) is a theory that has been discussed in Second Language Acquisition for almost three decades; the noticing hypothesis allocates the role of attention as the pivotal point for learning and continues generating research studies, implications for L2 pedagogy, articles, and a lot of controversies. The noticing hypothesis has its roots in two cases studies that professor: Richard Schmidt as the main proponent of this theory carried out in the early eighties; one of the studies included a Japanese artist learning English and the other one was Schmidt's own experience as a Portuguese learner. These two main studies raised the questions that led Schmidt to introduce the term "noticing" and noticing hypothesis.

Schmidt hypothesized that L2 learners cannot begin to acquire linguistic form until they become aware of it in input. Through his noticing hypothesis, Schmidt acknowledges the role played by consciousness in language learning and claims that, learners need to exhibit a conscious awareness of a specific form in the input before they process it. Schmidt (1993) also argues that "what must be attended to and noticed is not just the input in a global sense but whatever features of the input are relevant for the target system" (p. 209) in an interlanguage which is all the natural procedures to language learning process latent in the brain (Shahjahan et al., 2013). Thus, to learn some specific aspects of input, noticing those aspects is of utmost importance. However, the approach to link the

noticing hypothesis theory with smartphone usage and multitasking is to show the impact that it may have on attention and therefore learning.

Teachers will have a broader idea how this new chronic condition of manipulating the device in the classroom diverts attention from the lesson presented. Furthermore, it is crucial to look for answers to the extent of the abuse of cell phone usage that may be related to the habit of multitasking that will probably become an additional behavior, specifically during classroom instruction or lecturing and how it would influence attention, if students are distracted on their smartphones during instruction, they miss information that may create gaps in the lesson taught in class.

The answer to further understand this phenomenon of “how much smartphones can hurt attention during classroom instruction.” may be by contrasting the noticing hypothesis theory and the quality of attention in the classroom. In addition, since “consciousness” is a key factor in this theory; Schmidt makes an important distinction between consciousness as “intentionality” and consciousness as “attention”. The former relates to the conscious as a deliberate decision to learn some L2 knowledge. The latter refers to incidental learning, which usually happens when picking up L2 knowledge through exposure. Schmidt claims that “no matter whether learning is intentional or incidental, it involves conscious attention to features in the input” (Ellis, 1993). This difference led Schmidt to state that learning cannot take place without “noticing”, which can be understood as the process of attending consciously to linguistic features in the input” (Ellis, 1993).

It is evident that Schmidt's noticing hypothesis and its role in language acquisition has attracted some support (Ellis, 1993) as well as criticism (Truscott, 1998) and it goes at odds with theories that characterized the process responsible for the “acquisition” of implicit knowledge as

unconscious one, and that responsible for “learning” of explicit knowledge as a conscious one, Krashen’s (1983;1985;19987) theory particularly, according to Truscott (1998) who is one of the main critics of the noticing hypothesis.

Schmidt (2010) confirms and responds to the criticism by discussing four main objections which are the main objections known to date. By analyzing and responding to those objections, undoubtedly, both support and critique have helped to expand the state of the art of the noticing hypothesis and has encouraged the improvement of certain aspects of the theory.

Schmidt (2010) synthesized all four objections against the noticing hypothesis as follows: the first objection claims that constant studies on noticing hypotheses are just too coarse because they cover such long lapses of time, for instance: weeks or months. Due to this, attentional processes are affected because they normally occur in seconds or even fractions of a second. In response to this, the author states that this statement is not valid any longer nowadays, the fact that many other methods, such as retrospective reports or stimulated recall, have also dealt with these aspects.

The second objection relies on the premise that attention/awareness (Schmidt, 2010a) is not always necessary for all learning. There is some learning, for example: some implicit features, that do not even need input. Despite this, the author replies that most of the evidence suggests that there cannot be any learning without attention. However, he admits that some types of learning do require more attention than others, for instance: learning individual words versus writing systems.

The third objection refers to one of the three functional subsystems of attention, which are alertness, orientation, and detection. In this case, although detection, which is defined as registration of a stimulus, is a very key concept, it does not need awareness to be activated. In response to this,

Schmidt (2010) says that awareness is always required in detection. However, the author recognizes that there are some situations in which detection requires less awareness, as in the implementation of already established representations because the level of awareness is evidenced to be lower.

The fourth objection advocates that attention to environmental stimuli does not take a capital part in language acquisition. The reason why it is this way is that the input that is presented in the environment is very observable and tangible.

However, the input that is necessary for language acquisition is quite different; it is linguistic by nature, such as verbs, adjectives, nouns and so on. Therefore, this knowledge does exist in the mind and not in the environment. Because of this, as this type of input is not found in the environment, noticing is not possible. Schmidt also contradicts this objection. He claims that language users receive input from their linguistic experiences, so they can take instances from it that they can later complement with established exemplars. However, the author affirms that this input covers not only mere linguistic elements, such as lexical items, but also some others, for example social context and voice quality. Finally, 'noticing hypothesis will continue to be a controversial topic, however very difficult to ignore.

Not only mobile learning (Koole, 2009) is one of the newest areas for students to take advantage of smartphones and tables to enhance their education aspiration, but it is also the future of the education that students can study out of their smartphones or tables at home. However, it needs further research.

Linking the noticing hypothesis with smartphone usage and multitasking is the answer to explain how it impacts attention. Thus, smartphones have created their own problems in the classroom

during actual instruction. It has become an encroacher in classroom activities such as oral presentation, exams, lectures, etc. It has brought a set of new problems specifically distraction, divided attention, dependency, and addiction which affects attention overall (Darcin et al., 2016). It is the constant dependency and manipulation (multitasking) of the device in class which really fondness addiction. It is possible to say that there is an inverse relationship between the level of attention and the use of the smartphone in real time during class due to distractions generated by the manipulation of the device. Some of those distractions to attention are challenges for teachers in the classroom such as dependency or addiction, slow note - taking, low reading and writing skills, reduced quality of social face-to-face interaction, constant distraction by checking back and forth the device (Anshari et al., 2017). In addition, there are also psychological problems that this smartphone device has brought to students such as depression, stress, mental distress, nomophobia (the fear of being without a smartphone device), and most importantly low academic performance, (Samaha & Hawi, 2016). Students who constantly use their smartphone may face negative academic consequences in school, it will be reflected in low academic performance, and therefore less opportunities for learning (Duke & Montag, 2017). At work it would be loss of productivity due to interruptions in work life, less efficient to perform tasks, and getting in danger of being displayed.

In the classroom the constant connectivity with these smartphone devices have made a change in student's life because it has created a dependence to be informed, to be entertain, to be communicated or in- touch with the outer world, by using different media applications, this behavior has gone beyond control for teachers. In a study in South Korea during a blackout in March 2014 which lasted only six hours (Park, 2019), seventy smartphone users during that blackout were

interviewed in a period of 10 days. Park identified two types of dependence; functional dependence which stresses instrumental usefulness of the smartphone and existential dependence which focuses on obsessed, often unconscious, attachment to the smartphone. The author argues that those who perceive existential dependence were more reluctant in acknowledging negative aspects of smartphone use than those who perceive functional dependence. The author also stated that functionally dependent users were more willing to change their dependent behavior than existentially dependent people. However, smartphone users regardless of their types of dependence, denied that they were addicted to the smartphone (Park, 2019). Park's study is paramount because it shows how addiction plays an important role in the smartphone user, and it examined smartphone users' perception of their behavior (Park, 2019).

Smartphones are used easily in public and in private, it plays a vital role among high school and college students because of its accessibility and portability and its increasing array of functions make its overuse increasingly likely (Roberts & Pirog, 2012) leading to addiction. In a study by Roberts and Pirog (2012) with undergraduates (N=191) from U.S universities who completed a paper and pencil survey during class. The authors found that materialism, impulsiveness drive both a dependence on smartphones, and instant messaging. However, the authors talked not only about awareness of addiction to the smartphone, but to a particular application of the smartphone (Roberts & Pirog, 2012) which could be 'instant messaging, Tik-Tok, Twitter, etc.

Smartphones have created new trends such as quick reading and quick writing of text messages, quick checking e-mail messages, web browsing with too much frequency. Using GPS apps (Global position system) for directions while driving, and it has created behaviors such as

multitasking not only in the classroom, but in the workplace as well, and everywhere (Osman et al., 2012). However, at workplace the term cyberloafing or cyberstalking (using the internet at work and pretending to be working). Nowadays these terms are cyberloafing, cyberstalking are modern terms that are related to smartphone addiction (Gökçearsan et al., 2016). It is important to point out that these terms are used interchangeably to mean an action in the workplace when employees use their internet access at work for personal use (Cyberloafing). Employees may use a company computer to search the web for personal necessities during work hours, but most likely they use a smartphone which is preferable to avoid being monitored by the company, this behavior leads to inefficiency. Altogether, the behavior of manipulating the smartphone device either at school or work by multitasking or cyberloafing generates low performance and incompetent (King & Dong, 2017) on young adults.

In the classroom, the modern terms used are dependence and addiction which in the long term run affects attention. Students' cyberloafing in the classroom will be reflected in divided attention and low academic performance. Addiction can be defined as a disorder involving compulsive overuse of the mobile device, usually quantified as the number of times users access their devices and/or the total amount of time they are online over a specified period (Park, 2019). "Addiction" as defined in the dictionary is a functional abnormality of the body caused by food or pharmaceutical toxins; a pathological condition that one cannot tolerate without the continuous administration of alcohol or drugs. It is also defined as the status of not being able to rationally judge or distinguish due to certain ideas of objects. "Addiction" as defined by Know et al (2013) as commonly handled by neuropsychiatric departments, is a phenomenon that manifests tolerance, withdrawal symptoms, and

dependence, accompanied by social problems. According to the author the term was once limited to drugs or substances, but nowadays also applied to gambling, internet, gaming, smartphone usage, and other behavioral addictions (Kwon et al., 2013).

This addictive behavior of smartphone overuse is what really affects and diverts attention from instruction in the classroom, students tend to check their smartphone devices frequently, smartphone usage abuse and cyberloafing are a component of addiction (Gökçearsan et al., 2016). One of the most recent Smartphone addictions scales has been developed by Kimberly S. Young in South Korea which initially had 20 questions, then, The Korea Agency for Digital opportunities adjusted it to a 40 items or questions and labeled it the K-scale (Kwon et al., 2013), Soung was the first researcher to have established a basis for internet addiction criteria which has been widely quoted globally (Kwon et al., 2013).

The author Kwon et al (2013) has worked with this K-scale and revised it with factor analysis to develop the first smartphone addiction scale which is known as SAS. This SAS scale was adapted and use in this study as a template (See Appendix A) to create a new questionnaire which was implemented to 83 high school students as part of the current study. This study shows how multitasking, and smartphone usage in class have revolutionized the way educators plan their lessons plans by embracing technology to enhance learning in the classroom and out of the classroom. Most importantly, teachers need to be creative to interpret and understand the new ways students are acquiring information or learning.

Research Design

Methodology (quantitative research)

This study follows a quantitative methodology by gathering in this respect quantitative data by administering a student's survey. Nunan (1992) considers surveys and interviews elicitation devices, to elicit means to cause people to do or say something. So, an elicitation device in second language research is a procedure for getting research subjects to do or say something in response to a stimulus. The author acknowledges that the overall purpose of a survey is to obtain a snapshot of conditions, attitudes, and or events of an entire population at a single point and time by collecting data from a sample drawn from that population (Nunan, 2011). In addition, a survey is a system for collecting valid information from students to describe, compare or explain their knowledge, attitudes, trends, and behaviors (Fink, 2010). Most importantly, the system (survey) includes activities or questions that are connected and have definite goals and objectives, it must include survey objectives, writing proper questions and respond choices, selecting participants, and preparing a reliable and valid survey instrument.

In this quantitative study student's survey was utilized as a research instrument (See Appendix B) which was administered on June 5th of 2019 to a target sample of about 83 students from all Spanish classes at Gardena High School a public High School in California. The survey has an initial paragraph that indicates the intention of the survey and most importantly that it is totally confidential and volunteer (See Appendix D and E), all 83 students who participated in the study owned a smartphone. The study adhered to ethical considerations, in which all participants were volunteers and

the data collected was confidential, no student was pressured to participate nor were there academic rewards or benefits in terms of extra credit to boost student's grades for their participation.

The final survey utilized was adapted and edited from one of the most recent smartphone addictions scales developed by Kimberly S. Young in South Korea. The survey initially had 20 questions, then, The Korea Agency for Digital opportunities adjusted that instrument to 40 items or questions and labeled it the K-scale (Kwon et al., 2013), S Young was the first researcher who established the basis for internet addiction criteria which has been widely quoted globally. The author Know et al worked with this K-scale and revised it with factor analysis to develop the first smartphone addiction scale which is known as SAS. This SAS scale was used as a temple, and it was adapted to create a new questionnaire that was implemented to 83 high school students as part of the current study. The K-scale showed how multitasking, and smartphone devices have revolutionized the way educators have to plan lessons by embracing technology to enhance learning in the classroom. The new edited survey consisted of 37 questions, most questions were closed-ended and multiple-choice, however, the last 4 questions were open-ended (See appendix B for Research Survey).

Participants

The subjects of this study were 83 High School students from a public High School in California who were taking Spanish 2B for native Spanish speakers. Students in these classes were in the second year of their language requirement and they were from different grade levels 9-12 and aged from 14-18 years old. This Spanish level 2 class is offered to native Spanish speakers' students whose primary language is English. Most of the students considered English their first language, however, they speak Spanish fluently because they are children from immigrants of Spanish speaking

countries. Classes were generally taught in Spanish to about 35 to 40 students per class, misbehavior and disrespect in the classes were significant problems, however, the use of electronics, laptops and specific smartphones during class instruction were major disruptive problems. The misuse of these devices have created disruptions, shortened teaching time, and slowed instruction. Student's attention is often divided between their smartphones and instruction during most of the lesson.

Instrument

Surveys are widely utilized for gathering data in most areas of social inquiry from education to linguistics and even in other areas such as politics, sociology, psychology etc. Surveys' use ranges from large - scale demographic studies of communities' attitudes, trends, and behaviors (Cohen et al., 2011) to small-scale studies carried out by a group of researchers or a single researcher. The main goal of the student's survey in this study was to obtain a snapshot of attitudes and trends of smartphone usage in the classroom among High school students and how this behavior of manipulating (multitasking) the smartphone device during class instruction impacts attention and therefore learning.

A survey was conducted (See Appendix B), and it was administered to a sample of 83 students to three different Spanish classes. The survey consisted of 37 questions, most questions were closed-ended and multiple-choice, however, the last 4 questions were open-ended. The first 14 questions targeted age, sex, grade level, GPA rank, social status, who they do live with, and most importantly if they own a smartphone, what kind of smartphone, how long the student has had a smartphone, and how often they manipulated the smartphone during class time. Question 15 targeted the kind of activity they do on the smartphone, for example, reading and writing text messages, surfing the net,

listening to music, etc. There was a set of 12 possible choices of different kinds of activities that are possible to do in a smartphone. Questions 16 to 20 targeted the kind of activity or application that students prefer and spend more time on, how often they check their smartphone in class, and where do they keep their smartphone when they are in class or when they are at home, and if they ever turn off their smartphone. Questions 21 to 29 targeted usage in class and what specifically they use their smartphone in class for, how frequently they check their smartphone during class time (this question was asked three times, in three different ways). Questions 30 to 33 targeted how students feel when they did not have a smartphone with them and how they feel about banning smartphones in class and the entire school. Questions 34 to 37 were the open-ended questions targeting if students were able to control their smartphone during class time and how they feel about turning off their smartphone during class time. The last question asks students for ideas, opinions, suggestions about the use of smartphones in class and at school. All questions were tabulated on excel to be analyzed data statistically.

Findings and discussion

All answers were tabulated to be analyzed statistically and gathered quantitative data. Important general findings are presented in terms of percentages to represent a phenomenon of the smartphone dependency and usage in class, that may be affecting the whole population of the school and perhaps schools in the same area. The findings showed that 56% of students surveyed suggest that there should be school and classroom rules to control smartphone usage. Most importantly in the classroom ultimately is the teacher who has the authority to regulate the use of the smartphone either for entertainment or academic purposes. However, students stated that academic motivation in the

classroom is crucial to encourage student to use their smartphones for academic purposes.

Consequently, the survey found that students get distracted in class by using their smartphones for different reasons for example to communicate (be in touch, be informed), for entertainment (watch videos, play video games, listen to music), and to do academic work (results of open-ended questions 34 to 37). However, the social-economic status of the area plays a role in students' motivation and desire to get ahead with their education. For example, 48% of the students expressed not being motivated, 25% of students surveyed said they do not see the importance or reason to do academic work.

The following findings showed more details of the population or sample surveyed. Students' ages were between 15 and 18 years old, 43% were students aged 16, 25% were students aged 17, ages 15 and 18 were 16.3% and 12.5% respectively, there were 43 female students and 40 male students.

The majority of the students were sophomores 41%, juniors 37%, seniors 19%, and there were few freshmen 2%. Students' GPA were as follows: between 3.5 and 4.0; 49%, between 2.0 and 2.4; 19%, between 1.0 and 1.9; 10%. In addition, 57% of the students surveyed considered English their first language, 42% considered Spanish their first language, and there is 1% of other languages.

It is important to point out that about 75% of the students are in the free lunch program, 25% of the students said they did not ask for free lunch program, and 46% of students who are in the free lunch program eat at school. About 70% of the students live with their both parents, 14% live with only mom, a small number of students live with their dad 4%, and a small number of students live with other relatives 4%. All these stats are the result of the first 9 questions, and these data are

relevant to have a scope of the socioeconomical status of the students, who they live with, and what kind of students they are at school, in terms of academic performance.

Most of the 83 students surveyed said they own a smartphone and 3 students said they do not own a smartphone, but they have access to smartphone devices that they can use every day, even though these students are from families who are economical unprivileged, they managed to own a smartphone.

Question #10 how many hours during the day, do you use your smartphone? (See Appendix C Graphs) The idea with this question was to get a sense of time frame of how much time students were willing to share of smartphone usage, the results are as follows: 36% of students surveyed said that they use their smartphone all together at school and at home about 6 hours, 25% said that they only use it, about 4 hours all together home and at school, 23% said 8 hours, 8% said 10 hours, 7% said more than 10 hours. Question 10 is crucial to see that there is a significant smartphone usage and dependency (addiction), and this finding is for only one day, putting these numbers in perspective for a week, an even a month the stats become alarming, these findings are crucial to prove and show evidence of smartphone over use or addiction to the smartphone. The results from question 10 of the survey started to show the behavior of dependency by smartphone manipulation.

Question #11 how do you rate yourself when using your smartphone? In terms of addiction to your smartphone? 39% of the students said that they are not addicted to their smartphone, only 8% of the students answered, "I am honest, I am addicted," 28% of the students responded that they use their smartphones a lot, but they are not addicted to it.

In following questions (12 to 16), some interesting findings showed that 56% of the students use their smartphones consistently every day of the week and 46% never turned their smartphone off, students stated that they use their smartphones for a variety of purposes, check text messages, check media apps, play video games, view photos. These findings are consistent with the three categories why students use their smartphones for that were already found “to communicate, for entertainment, and for academic work”. Equally important the results showed that 50% of the students check their smartphones regularly while doing homework (multitasking).

When students were asked about how often they use their smartphones to play video games during class instruction? question 24, 41% of students said a few times, in contrast 48% of the students said that they never play video games during class instruction.

Question#24 is relevant for this study because usage of the smartphone is being measured. When framing the question slightly different later in questions #26; do you read text messages on your smartphone during class time? More evidence is gathered to present the behavior of checking smartphone and paying attention in class simultaneously, the results have a similar correlation in terms of usage. Students’ responses in question 26 were limited to three choices as follows: sometimes, always, never, and the results show that 76% of students check their smartphone in class “sometimes,” 12% of the students “always,” and 12% of the students responded that they never checked their smartphones in class.

However, reframing the question again for the third time, question #28 how often do you check your Smartphone in class for personal reasons? This question was framed to see if students change the pattern of their responses, they do not, instead they followed the same pattern that shows a

correlation with questions 24 and 26 in terms of the need to be manipulating the smartphone device. The responses showed that 67.5% of the students peek or check their smartphones between 1 to 10 times during class to see if they have text messages, 12% checked their smartphone between 11 to 20 times, 3.6% checked their smartphones between 21 to 30 times, 2.4% checked their smartphones between 31 to 40 times, 13.3% never checked their smartphones in class. The responses on questions 24, 26, and 28 showed a progressive and continues smartphone usage among students, based on the evidence presented, it is possible to say that every time students check or peek their smartphone devices during class time to see if they have any messages, students get distracted are distracted, by putting one action on hold (paying attention to class) to attend another action (check smartphone for messages), and attention is affected.

In short, the results of the analysis of questions 24, 26, 28 showed that students do use their smartphone during class time with a considerable frequency, peeking or checking during class time stopped attention to instruction, and showed evidence of multitasking during class, and therefore that is divided in the classroom.

Discussion Data analysis

This study is consequential for the Subject High School and for other schools in the same socio-economical areas to understand the perception of the students toward academic work and the role smartphones plays in the classroom. Most importantly, schools can use the information of this study to address and mediate in some of the issues, for instance: motivation, apathy, multitasking, attention. Finally, the school can use the finding of this study to open dialogues and to create channels

of communication among the students about the importance of taking control of the smartphone device in the class.

However, one important point in the discussion is that this study is a call for teachers to create lessons that engage student's by addressing real life situations with a different pedagogy, different didactic materials, make sure to incorporate technology to make a more inclusive environment for students, and to have a healthy smartphone usage policy in the classroom.

In short, if students continue with the habit of shifting attention from one task to focus on another task on their smartphone by multitasking while in class, it may be a problem that needs further research to find out how much that habit affects attention and therefore impacts Second Language Acquisition.

Further research

Most research with smartphones has deal with addiction (Samaha & Hawi, 2016) and dependence (Savic et al., 2013), even addiction to its applications has had some curiosity and most importantly how this addictive behavior impacts academic performance among High School students and College students. There are other psychological consequences for abusing the use of smartphones such as loneliness, preoccupation, anxiety, loss of sleep, low productivity at work (Bian & Leung, 2015). However, there is the need to expand on understanding the behavior of smartphone usage versus attention and the impact on learning. The need for understanding the gap or the sum of the gaps that each distraction creates by encroaching in attention and messing with learning acquire in the classroom needs further research

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Appendix A

Smartphone Addiction, Know et al scale by Kimberly S. Young

	M(SD)	Daily-life disturbance	anticipation	Withdrawal	relationship	Overuse	Tolerance
1	Missing planned works due to smartphone usage	2.46(1.28)	-406				
2	Having a hard time concentrating in class, while doing assignments, or while working due to smartphone use	2.98(1.34)	-420				
3	Experiencing lightheadedness or blurred vision due to excessive smartphone use	2.96(1.44)	-906				
4	Feeling pain in the wrists or at the back of the neck while using a smartphone	2.64(1.47)	-788				
5	Feeling tired and lacking adequate sleep due to excessive smartphone use	2.63(1.43)	-710				
6	Being incapable of doing anything without a smartphone as all schedules and personal stuff are saved in the smartphone	2.66(1.36)					
7	Neglecting matters other than smartphone use even when there are many other things to be done	2.41(1.29)					
8	Conflicting with family members due to smartphone use	1.61(0.95)					-577
9	Experiencing auditory hallucinations of smartphone sounds while not using a smartphone	1.80(1.11)					
10	Feeling calm or cozy while using a smartphone	1.94(1.05)	610				
11	Feeling pleasant or excited while using a smartphone	2.82(1.35)	466				
12	Feeling confident while using a smartphone	2.13(1.20)	622				
13	Being able to get rid of stress with smartphone use	2.17(1.15)	634				
14	There is nothing other than smartphone use that is fun to do in my life.	1.73(0.96)	625				
15	Having used a smartphone just to feel good	2.72(1.45)					
16	My life would be empty without my smartphone.	2.03(1.18)	453				
17	Feeling most liberal while using a smartphone	1.96(1.16)	612				
18	Smartphone use is the most fun thing to do.	1.70(0.96)	687				

19	Won't be able to stand not having a smartphone	2.18(1.30)	622
20	Feeling impatient and fretful when I am not holding my smartphone	2.13(1.25)	641
21	Having my smartphone in my mind even when I'm not using it	2.06(1.16)	637
22	I will never give up using my smartphone even when my daily life is already greatly affected by it.	2.05(1.16)	449
23	Getting irritated when bothered while using my smartphone	2.04(1.17)	400

No.	Question	M(SD)	Factor					
			Daily-life disturbance	Positive anticipation	Withdrawal	Cyberspace-oriented relationship	Overuse	Tolerance
24	Bringing my smartphone to the toilet even when I am in a hurry to get there	2.78(1.47)			.422			
25	Feeling depressed, anxious, or oversensitive when I am not able to use my smartphone	1.91(1.11)						
26	Being stressed out when I am not in a hot zone (Wi-Fi area)	2.47(1.41)						
27	Always preparing my charging pack to make sure that my smartphone is charged all the time	3.16(1.44)						
28	Feeling bored while doing other stuff without my smartphone	2.69(1.40)						
29	Feeling more relieved with my smartphone by my bedside when going to bed	2.50(1.29)						
30	Feeling great meeting more people via smartphone use	2.72(1.39)					481	
31	Feeling that my relationships with my smartphone buddies are more intimate than my relationships with my real-life friends	1.77(1.03)					658	
32	Not being able to use my smartphone would be as painful as losing a friend	1.92(1.13)					703	
33	Feeling that my smartphone buddies understand me better than my real-life friends	1.54(0.86)					725	
34	Constantly checking my smartphone so as not to miss conversations between other people on Twitter or Facebook	1.94(1.19)					685	
35	Checking SNS (Social Networking Service) sites like Twitter or Facebook right after waking up	2.05(1.38)					728	
36	Preferring to talk with my smartphone buddies to hanging out with my real-life friends or with the other members of my family	1.58(0.99)					658	
37	Not minding spending money on paid smartphone applications	1.91(1.24)						
38	Trying to hide what I have been up to in relation to my smartphone use	1.86(1.16)						
39	Not being able to keep appointments due to excessive smartphone use	1.61(0.92)						
40	Having used my smartphone when I am not supposed to (in class, during a meeting, etc.)	3.32(1.56)						
41	Preferring searching from my smartphone to asking other people	3.34(1.43)					.420	
42	My fully charged battery does not last for one whole day.	3.48(1.59)					.516	
43	Using my smartphone longer than I had intended	3.18(1.39)					.701	
44	Feeling the urge to use my smartphone again right after I stopped using it	2.59(1.31)					.469	
45	Having tried time and again to shorten my smartphone use time but failing all the time	1.94(1.07)						-.591
46	Always thinking that I should shorten my smartphone use time	2.16(1.31)						-.676

47 The people around me tell me that I use my smartphone too much. 1.70(1.03)

48 Preferring Web surfing on my smartphone to doing so on computers 2.05(1.41)

Eigenvalue

Variance (%)

*A cutoff of 0.40 was used for inclusion.

doi:10.1371/journal.pone.0056938.t002

Appendix B

Survey (used in this study)

Smartphone Survey

Dear Students,

This is a research project being conducted as part of graduation requirement for the Master's in English Language Teaching for Self-Directed Learning at Universidad de La Sabana in Bogota, Colombia. We want to find out how High School Students use Smart Phones in academic environments.

This survey will take about 10 minutes and it will help us better understand current trends around these technologies and to what extent the next trend might be.

- Please answer all questions as honestly as possible.
- There are no "right" or "wrong" answers.
- It doesn't matter how other people would answer the questions or what they would expect from you. Only your own opinion is important.
- You don't have to give your name, so no one will find out what your answers were. We cannot and do not want to find out who answered what.

*** Required**

Smartphone Survey



1. How old are you ? *

14

15

16

17

18

Between 19 and 21

Older than 21

2. Are you ... *

Female

Male

3. What academic year are you in? *

Freshman

Softmore

Juniour

Senior

3b. What is your current GPA (Grade Point Average) in school? *

Between 3.5 and 4.0

Between 2.5 to 2.9

Between 2.0 and 2.4

Between 1.0 and 1.9

4. What language do you consider to be your first language? *

English

Spanish

Other (Please Write)

5. Are you in the lunch program? *

Yes

No

6. If you are in the lunch program, do you really eat lunch at school? *

Yes, I eat at school (breakfast and lunch)

Yes, I am in the lunch program, but I do not eat at school

No, I am not in the lunch program. I never eat at school

No, I am not in the lunch program, but I eat at school, I buy my food

Other:

7. Who do you live with? (Check all that apply) *

Mom and Dad

Only mom

Only Dad

My grandparents (both grandparents)

Only my grandma

Only my grandpa

My aunt

My uncle

Foster home

8. Do you own a smartphone? Or do you have a phone you can use all the time? *

Yes, I own a smartphone

Yes, I have a smartphone, it is not mine, but I can use it every day

No, I do not own a smartphone (I can't send text messages because I do not have a smartphone)

9. If you own a Smartphone, what brand do you own? (e.g., iPhone or Samsung Galaxy or Google Nexus or similar)? *

iPhone

Samsung

Galaxy

Google

Pixel 3

Other:

10. How many hours, during the day, do you use your Smartphone? (Total time in school and at home) *

about 10 hours all together at school and home

about 8 hours all together at school and home

about 6 hours all together at school and home

about 4 hours all together at school and home

I use it more than 10 hours (Day and night)

11. How would you rate yourself when using a smartphone? In terms of addiction to your smartphone *

I am honest, I am addicted

I am sort of addicted

I am not addicted at all

I do use my Smartphone a lot, but I am not addicted

12. When you do you use your Smartphone the most? *

Weekdays (Monday through Friday)

Weekends (Saturday and Sunday)

I use it every day

Mostly during the weekdays

Mostly on the weekends

13. Do you turn off your Smartphone at night? *

Yes, I turn it off around 9:00 P.M

Yes, I turn it off around 10:00 P.M

Yes, I turn it off around 11:00 P.M

No, I never turn it off

14. How long have you owned a smartphone?

2 years

10 years

8 years

4 years

More than 10 years

6 years

15. What activities do you usually use your smartphone for? (Check at least three instances that you use it the most) *

To record videos (to create short videos of myself and my friends, to just video tape stuff, etc.)

To do phone calls (mostly)

To navigate for maps (to look for malls, shops, restaurants or get around using GPS)

To Bank (pay bills, check my account, make a deposit, make money transfers, etc.)

To play videogames

To do homework

To watch videos

To send text messages (check texts, send texts, send photos, etc)

To check my social networks (Facebook, Twitter, Instagram, Snapchat, WeChat, etc.)

To take pictures (to take "selfies"; to take pictures of others)

To shop (order food, buy clothes, buy movie tickets, pay for Uber)

To listen to music

16. Do you ever use your Smartphone to study at home, (not homework) study for a test or to memorize concepts, or to read for a class. *

No

Barely

Never

Yes

17. Do you check your Smartphone when you are studying for a test or when you are doing homework? *

Barely

No

Yes

Never

18. Where do you normally keep your Smartphone when you are at home?

(Check all that apply) *

On your dining room table

In your pants' pocket

In your purse

On your T.V table

In your backpack

In your jacket/shirt's pocket

On your night table/near your bed

19. Where do you normally keep your Smartphone when you are at school?

(Check all that apply) *

In your pants' pocket

Between your legs

In your backpack

On your lap

In your purse

In your jacket/shirt's pocket

In your locker

Under your butt

On your student's desk

20. How often have you used your Smartphone to play video games during class instruction? *

A few times

Never

I have played more than 3 games

I have played more than 5 games

21. When you are at home, do you ever use your Smartphone to do homework? *

Yes

never

barely

No

22. When you are in class do you use your Smartphone?

never

barely

Yes

No

23. When in class what do you use your Smartphone... (check all that apply) *

To check my social media (personal)

To study vocabulary

To play video games

To do homework

To watch sports

To access Google classroom

To check the spelling of difficult words

To do classwork

To watch videos (personal)

To check my Digital portfolio

To look for word definitions

24. How often do you check your Smartphone in a class period for personal reasons? *

21 to 30 times (during one class)

40+ (during one class)

1 to 10 times (during one class)

I never check my phone in any class

11 to 20 times (during one class)

31 to 40 (during one class)

25. Do you send text messages during class time? *

Barely

Always

Sometimes

Never

26. Do you read texts on your Smartphone during class time? *

Always

Never

Sometimes

27. When doing your homework, does your Smartphone distract you from your homework? *

Sometimes

Always

Never

Barely

28. How often do you check your Smartphone in class for personal reasons?
(You just peek to see if you have messages or just check an application you love) *

1 to 10 times (during one class)

40+ (during one class)

I never check my phone in any class

31 to 40 (during one class)

21 to 30 times (during one class)

11 to 20 times (during one class)

29. In general what do you use your Smartphone for? *

For emergencies

To be in touch with my parents

To be in touch with my friends by texting and calling them

To check social media and be informed

30. How do you feel about banning (prohibiting) the use of Smartphones in all of your classes? *

It is a good idea

It should not be banned or prohibited

I will use my Smartphone anyways

I can't live without using my Smartphone

Does not affect me

31. How do you feel when you do not have your smartphone with you? *

Sad and depressed

Angry and in a bad mood

Lonely

Happy that I don't have to talk to anyone

Does not affect me

Other:

32. How do you feel about banning (prohibiting) the use of Smartphones in the entire school? (i.e. no use of cell-phones in school at all, not even during passing periods) *

It is a good idea

It should not be

I don't think it will work

It doesn't really affect me

33. Choose the best reasons why you do not do your homework or classwork?
(Select all that apply) *

I work after school

I am not motivated

I do not see the reason to do homework or to study

I do not think it is important

I prefer to be on my smartphone

34. In your opinion to what capacity (extent) can you actually control your impulse of texting in the classroom? in other words, can you refrain yourself from using your smartphone during class instruction? Yes, No, please explain either way *

Your answer

35. Seriously, why do you use your smartphone in class? please explain *

Your answer

36. How do feel about turning off your smartphone during class? *

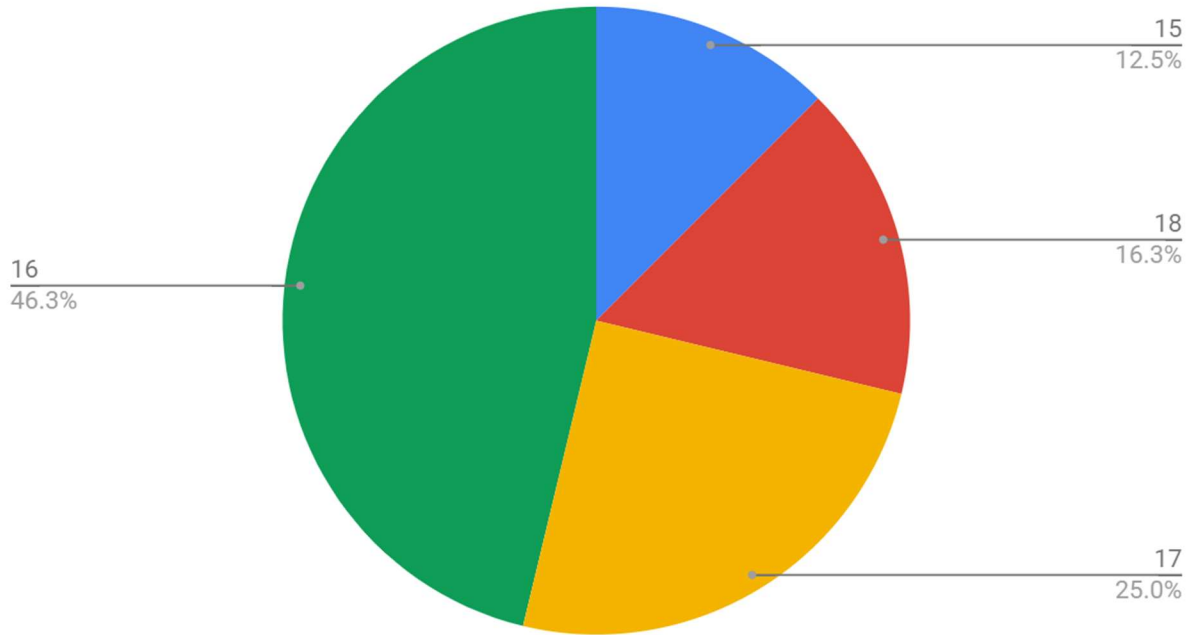
Your answer

37. What recommendations, suggestions or ideas would you give to the school and most importantly to your teachers about the use of smartphones in class and in school? *

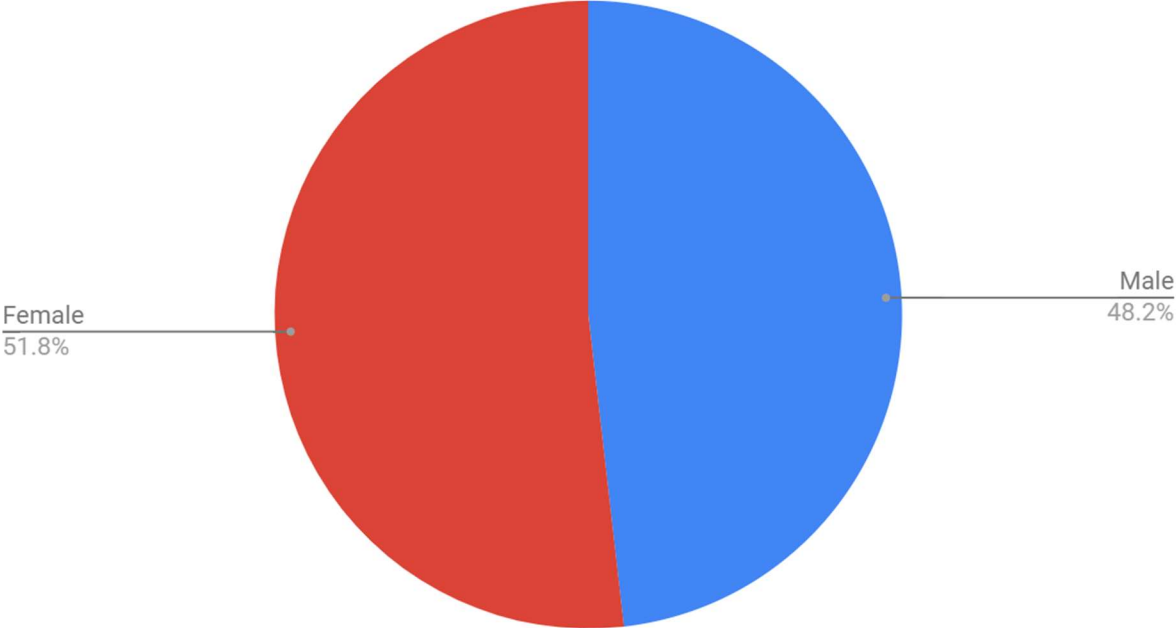
Appendix C

Some Important Graphs of survey (these graphs were made on excel)

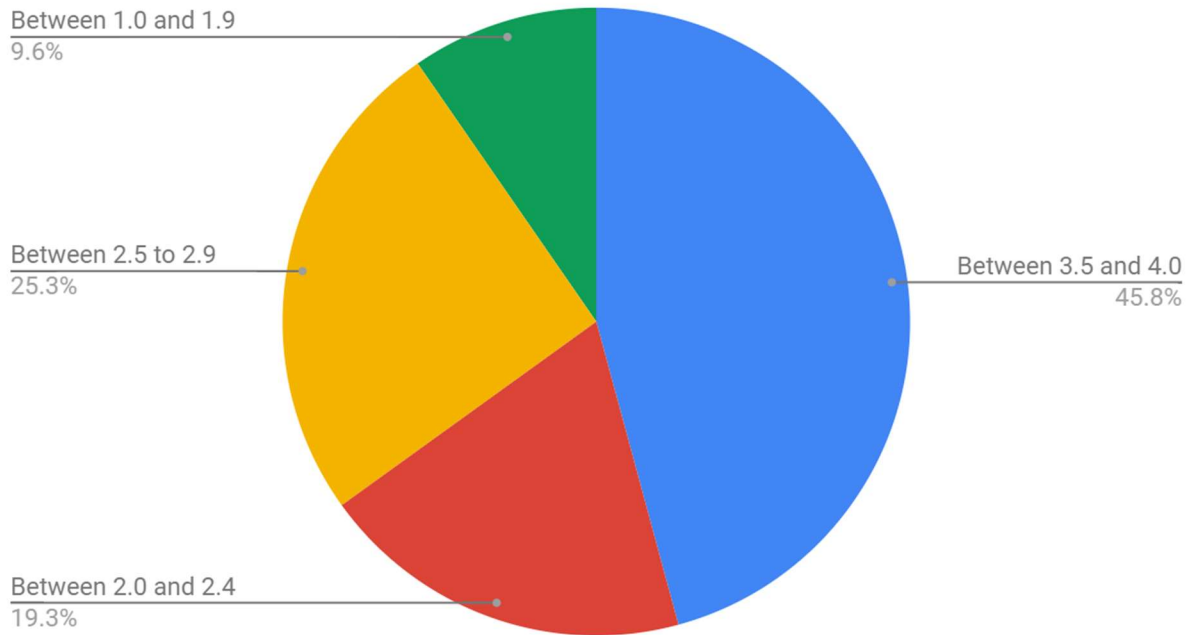
1. How old are you ?



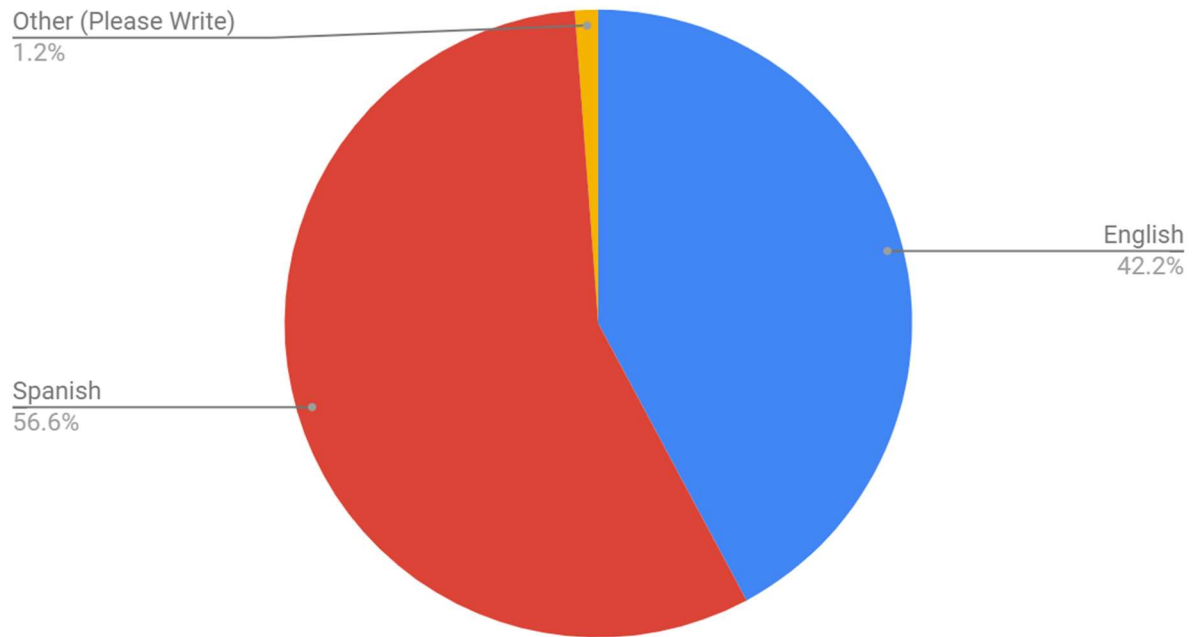
2. Are you male or female?



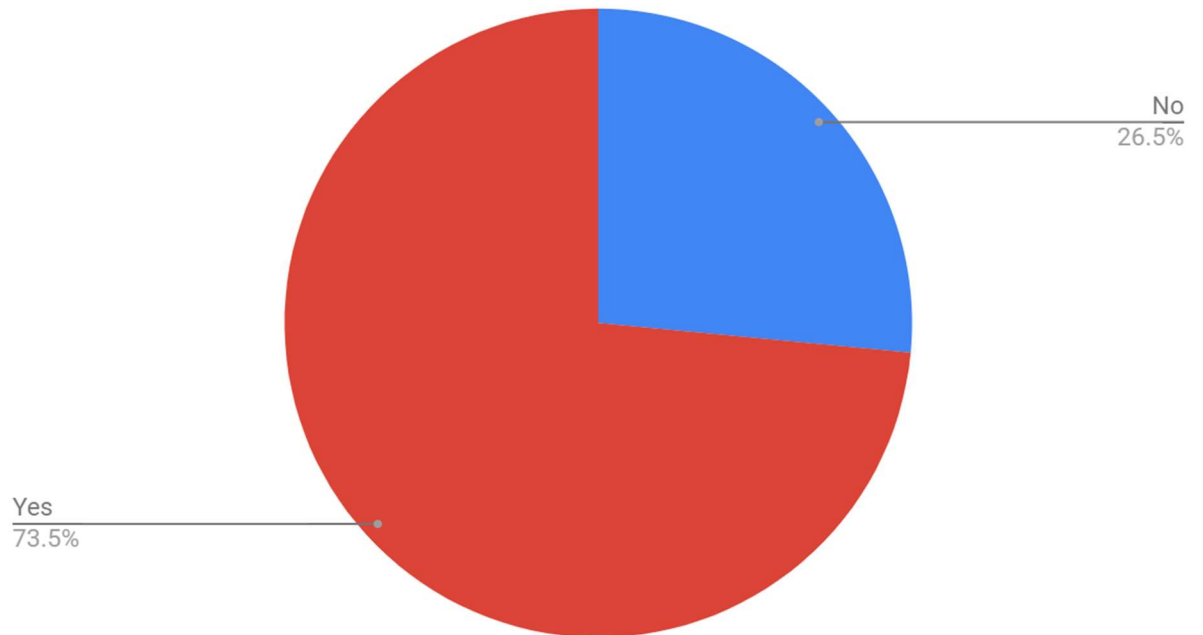
3. What is your current GPA (Grade Point Average) in school?



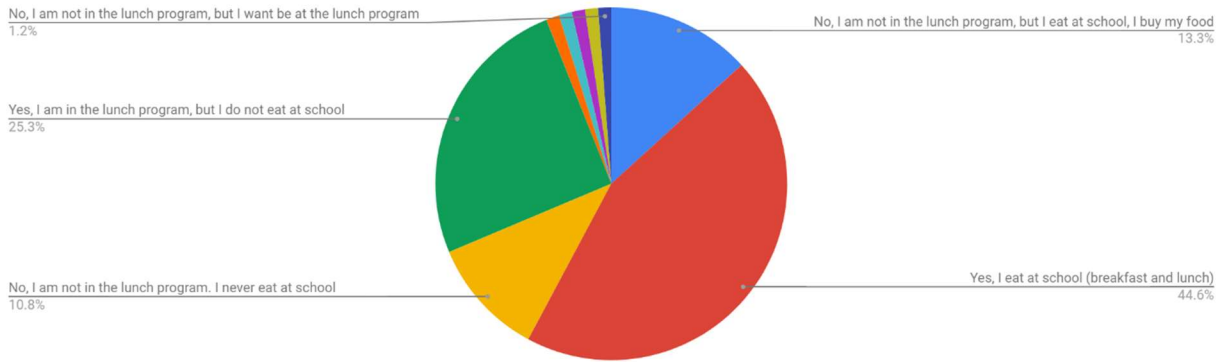
4. What language do you consider to be your first language?



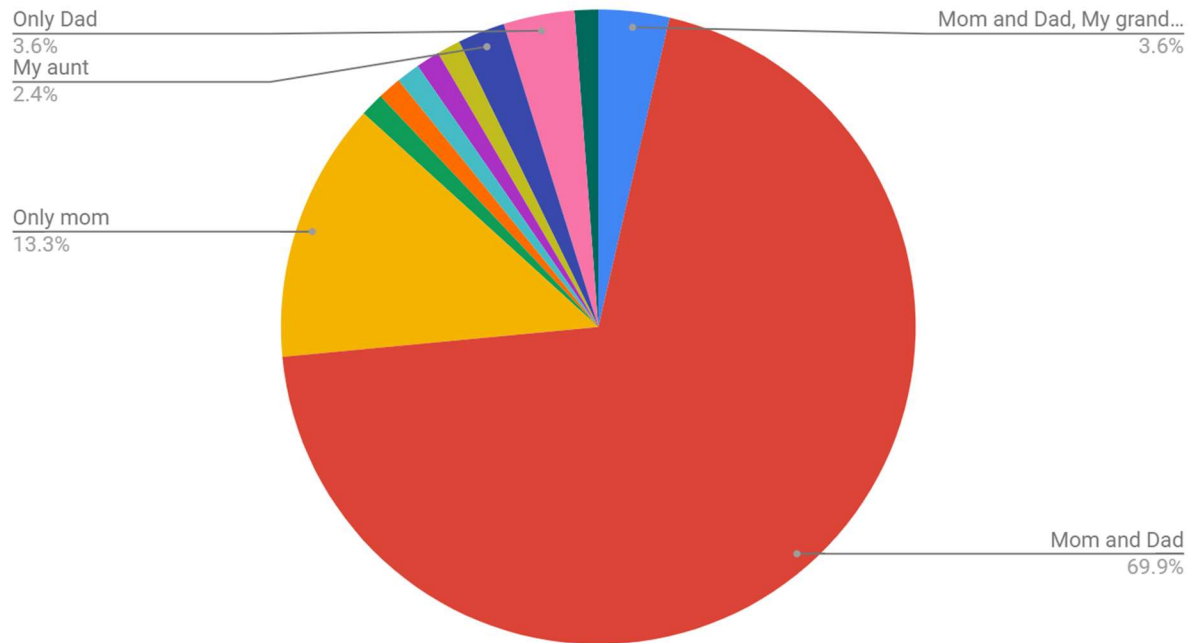
5. Are you in the lunch program?



6. If you are in the lunch program, do you really eat lunch at school?

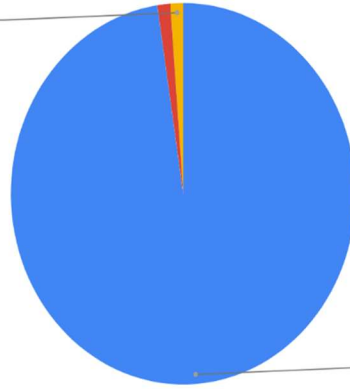


7. Who do you live with? (Check all that apply)



8. Do you own a smartphone? Or do you have a phone you can use all the time?

Yes, I have a smartphone, it is not mine, but I can use it every day
1.2%

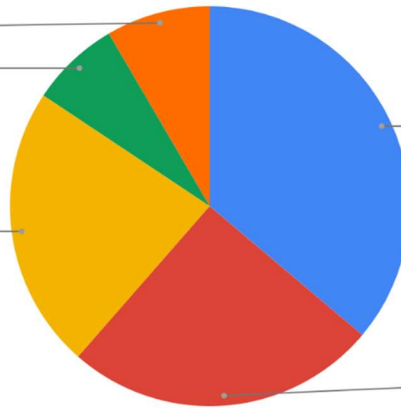


Yes, I own a smartphone
97.6%

10. How many hours, during the day, do you use your Smartphone? (Total time in school and at home)

about 10 hours all together at school and home
8.4%

I use it more than 10 hours (Day and night)
7.2%

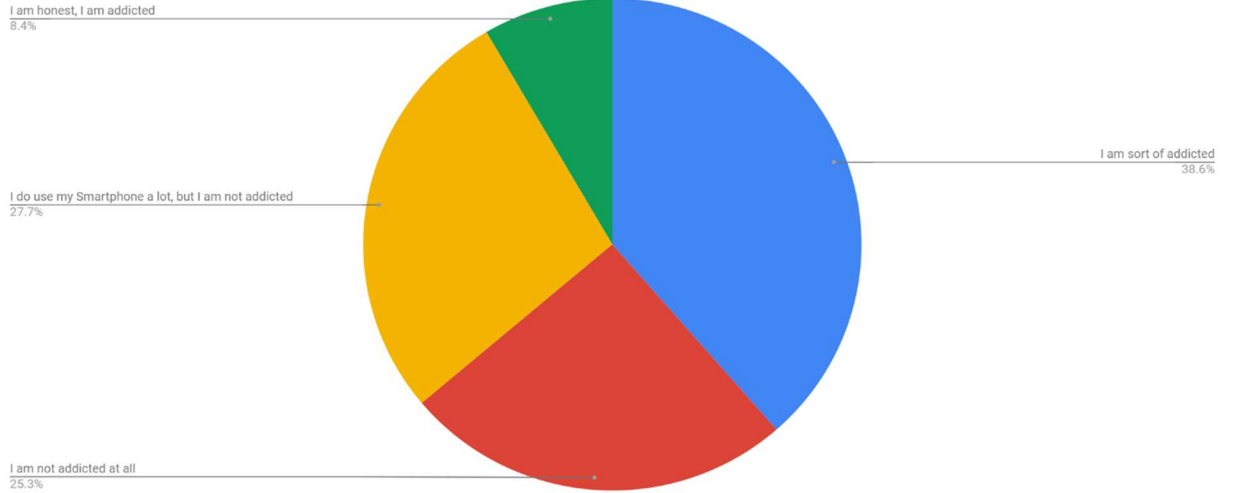


about 6 hours all together at school and home
36.1%

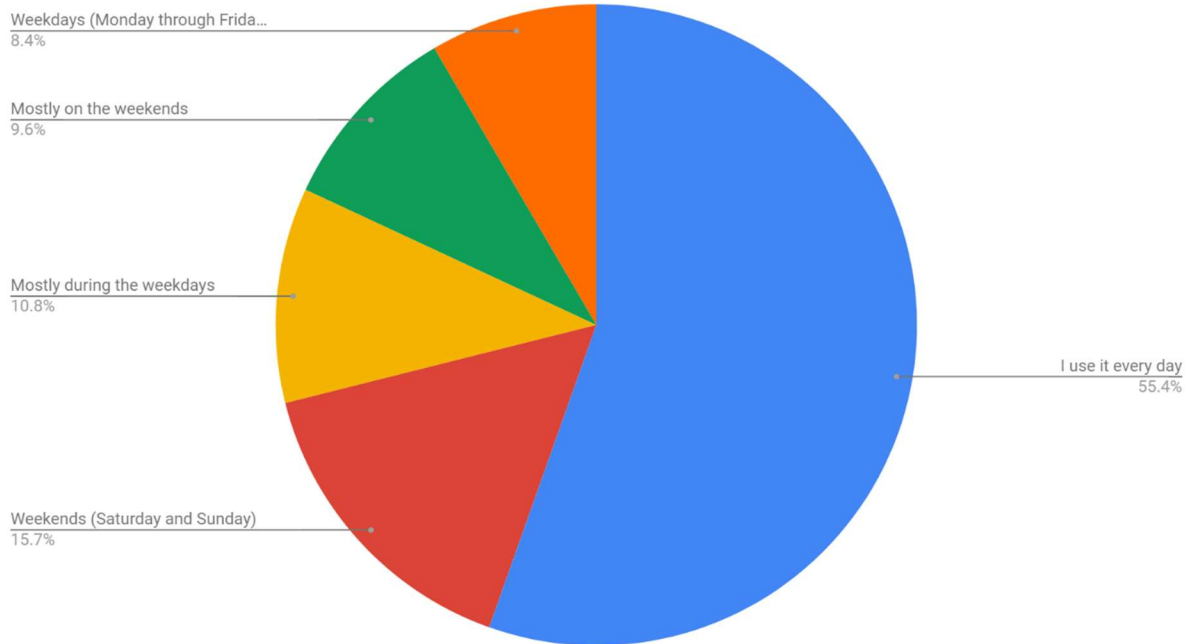
about 8 hours all together at school and home
22.9%

about 4 hours all together at school and home
25.3%

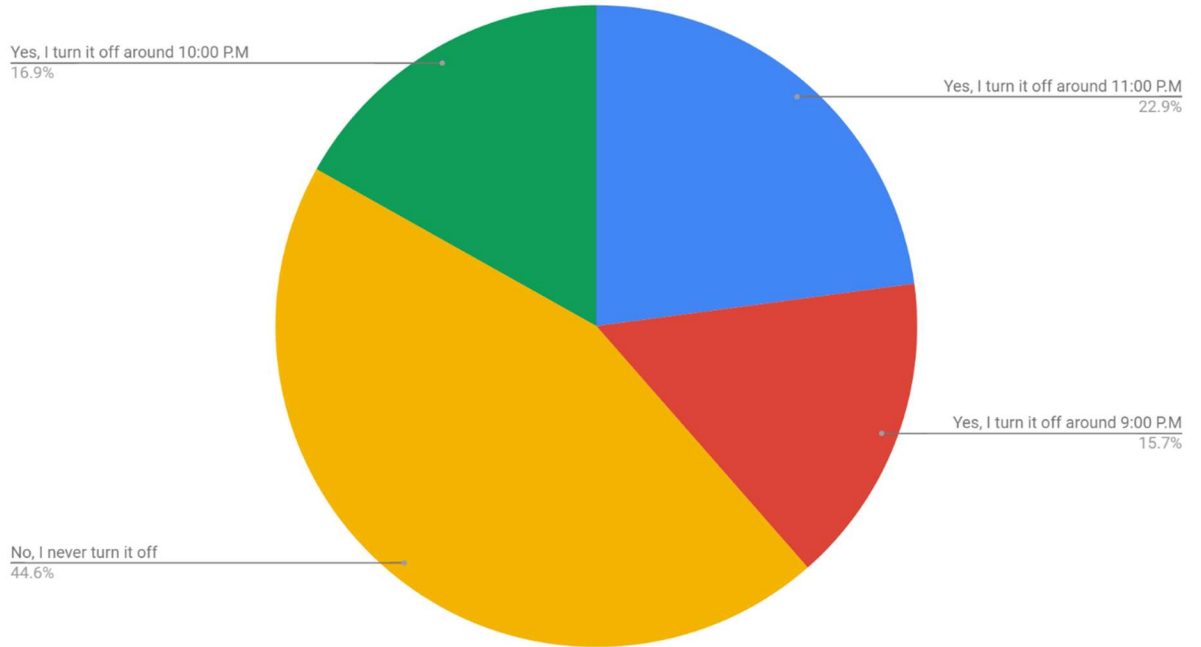
11. How would you rate yourself when using a smartphone? In terms of addiction to your smartphone



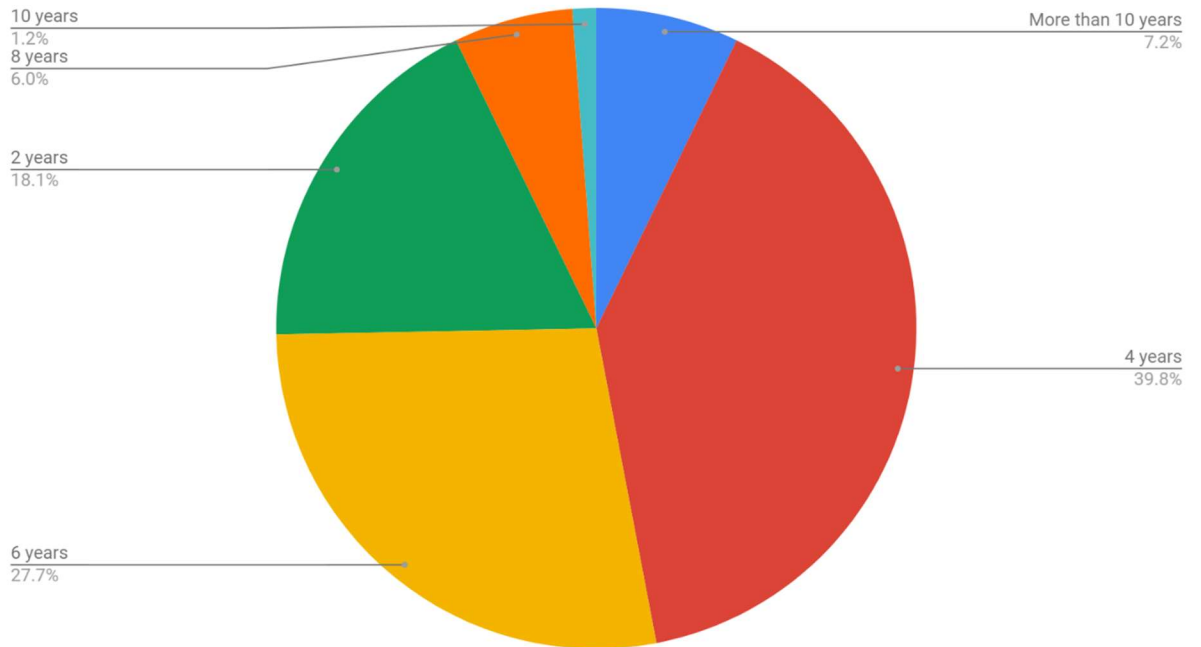
12. When do you use your Smartphone the most?



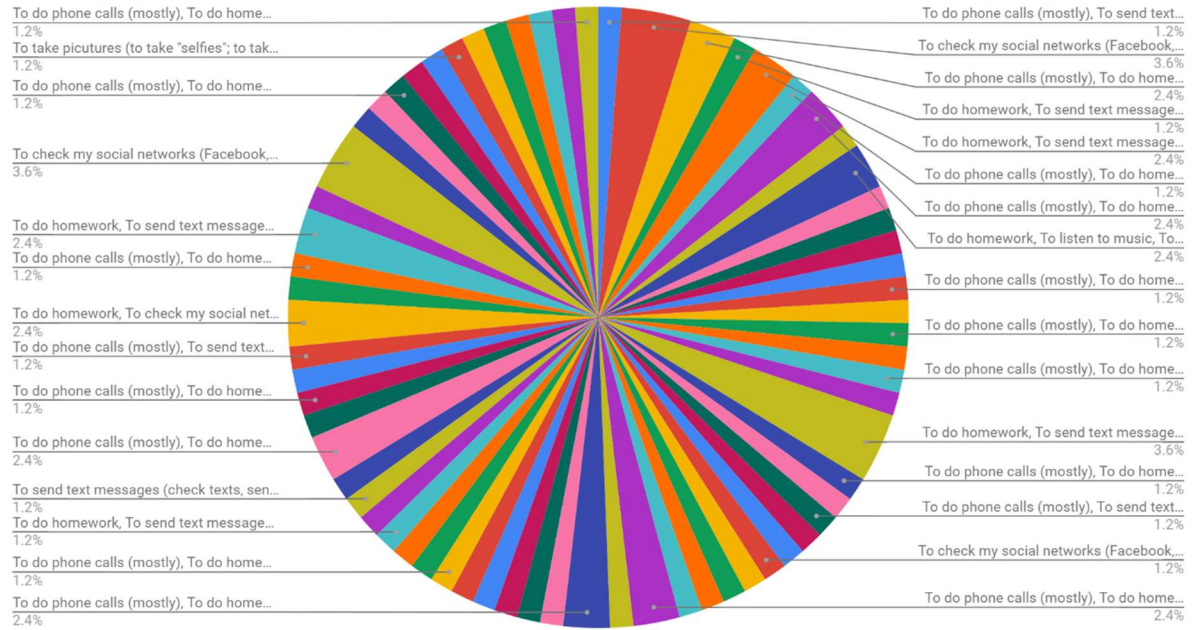
13. Do you turn off your Smartphone at night?



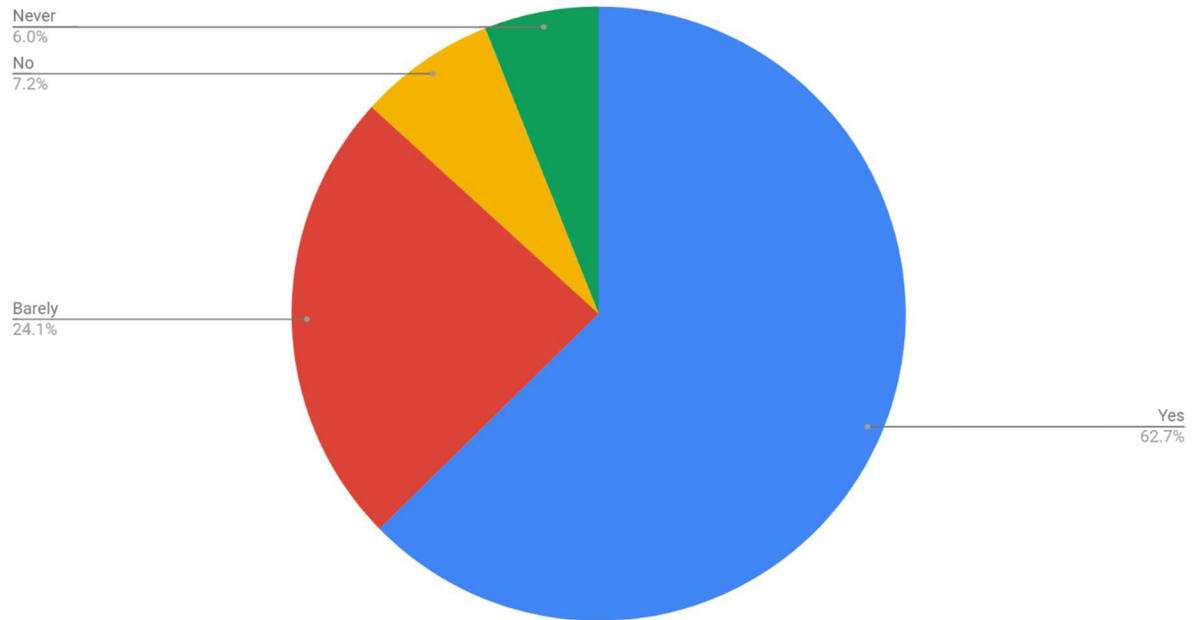
14. How long have you owned a smartphone ?



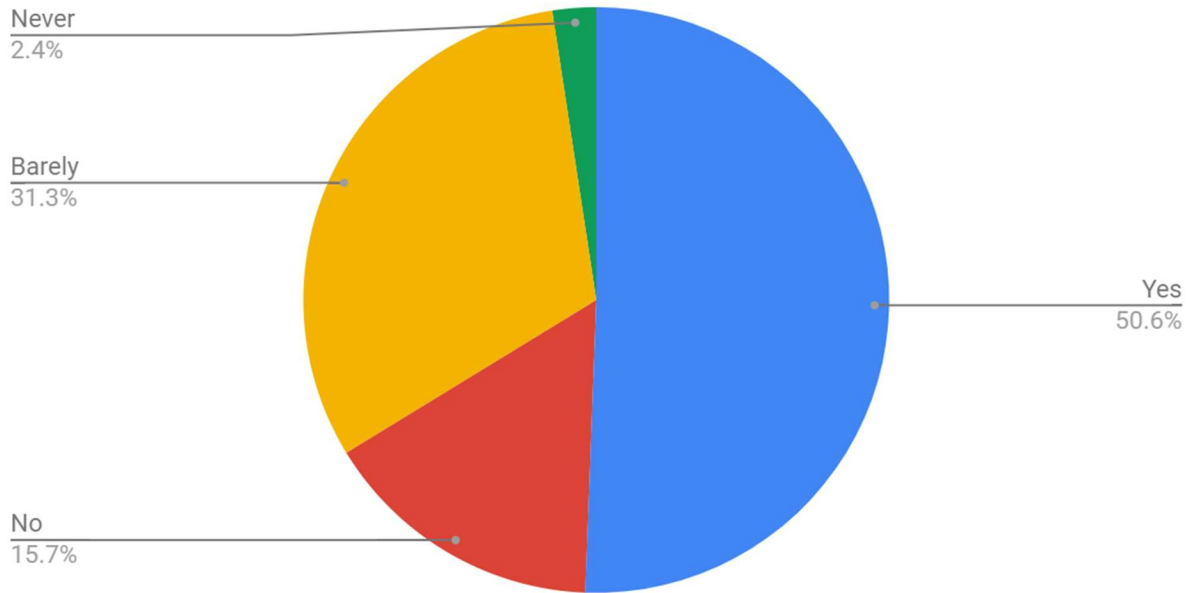
15. What activities do you usually use your smartphone for? (Check at least three instances that you use it the most)



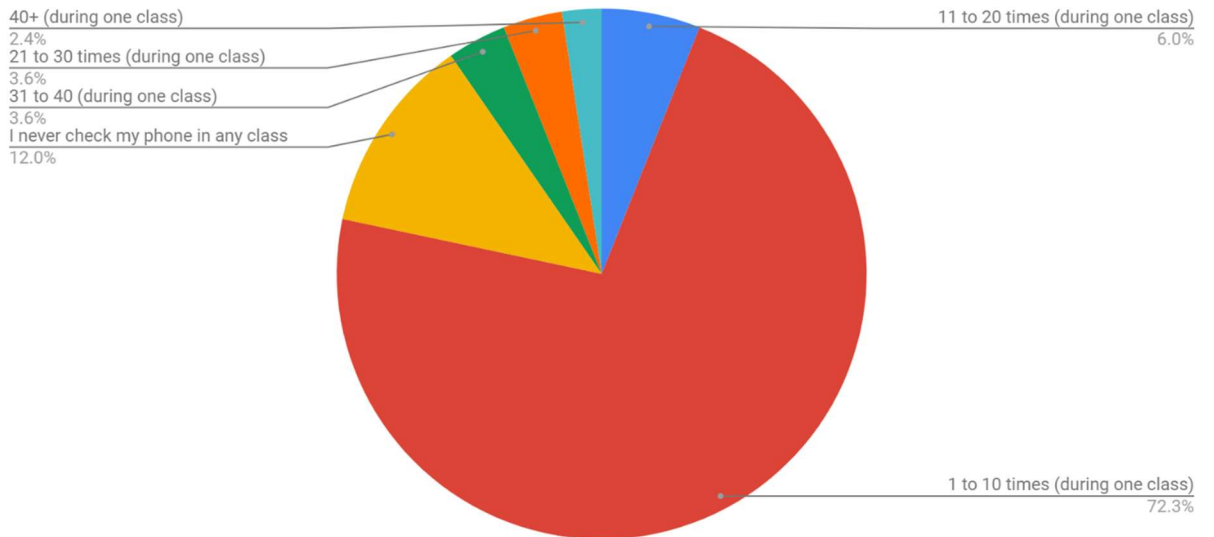
16. Do you ever use your Smartphone to study at home, (not homework) study for a test or to memorize concepts, or to read for a class.



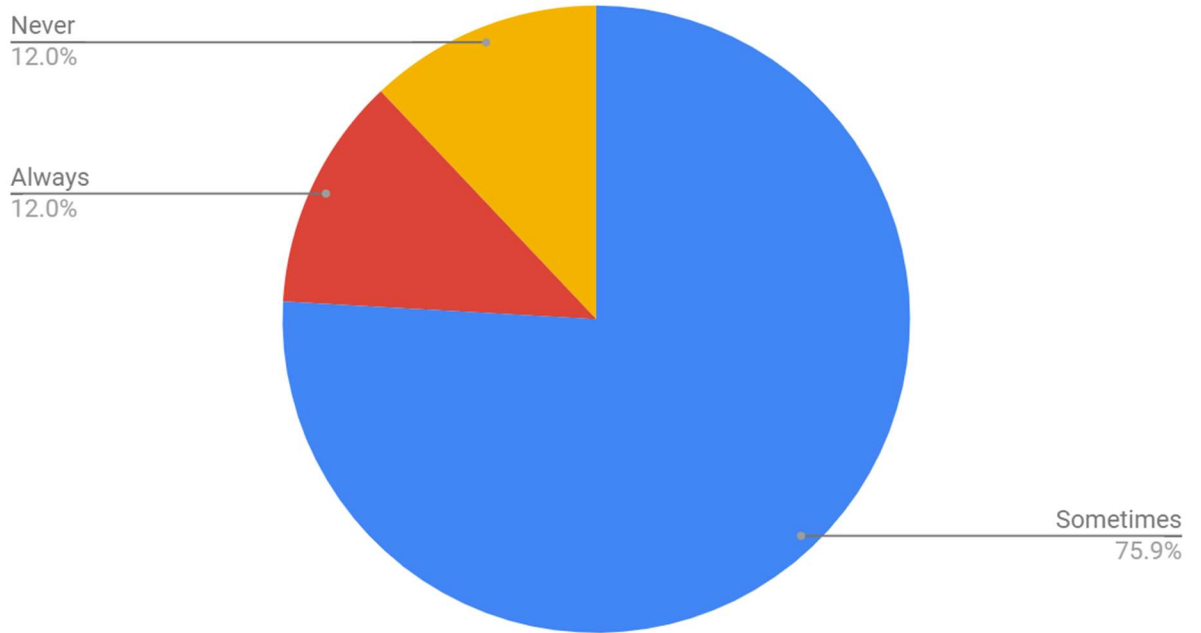
17. Do you check your Smartphone when you are studying for a test or when you are doing homework?



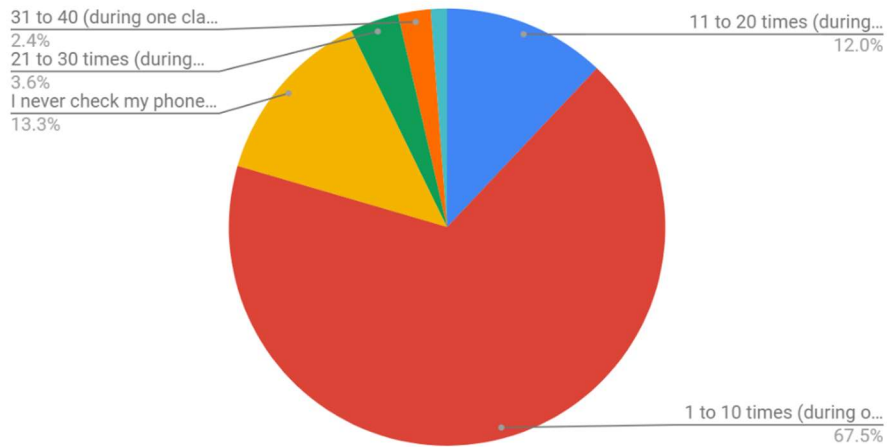
24. How often do you check your Smartphone in a class period for personal reasons?



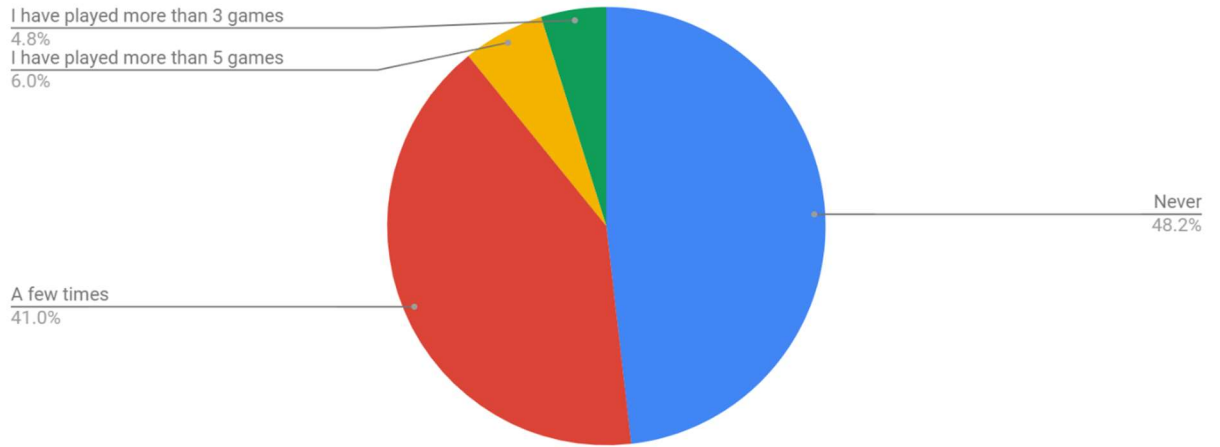
26. Do you read texts on your Smartphone during class time?



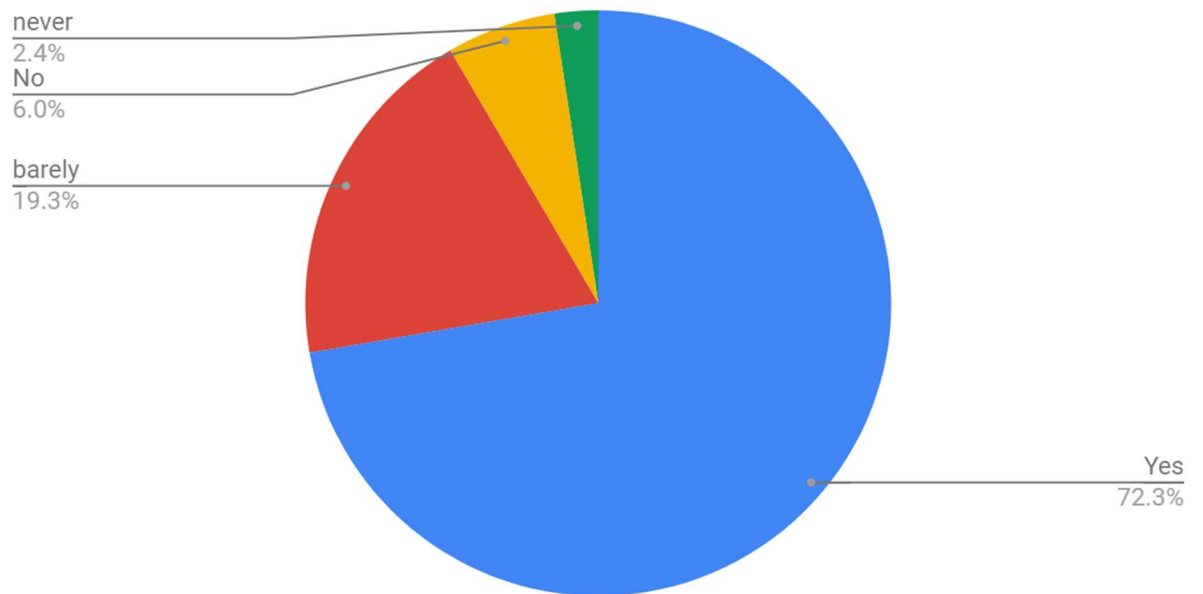
28. How often do you check your Smartphone in class for personal reasons? (You just peek to see if you have message...



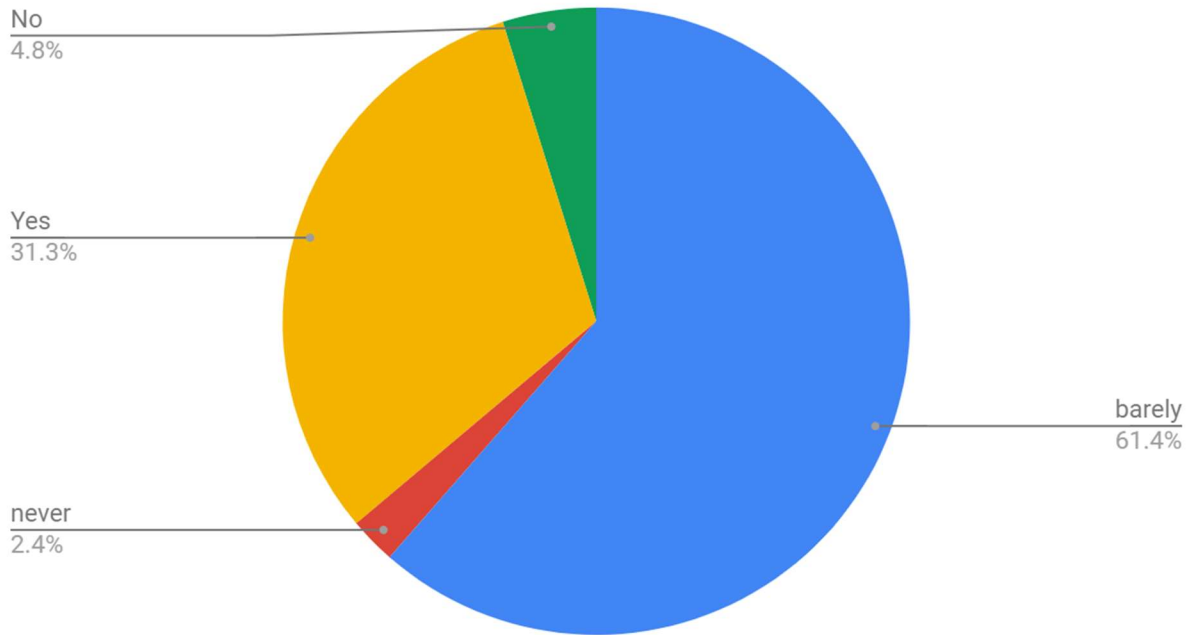
20. How often have you used your Smartphone to play video games during class instruction?



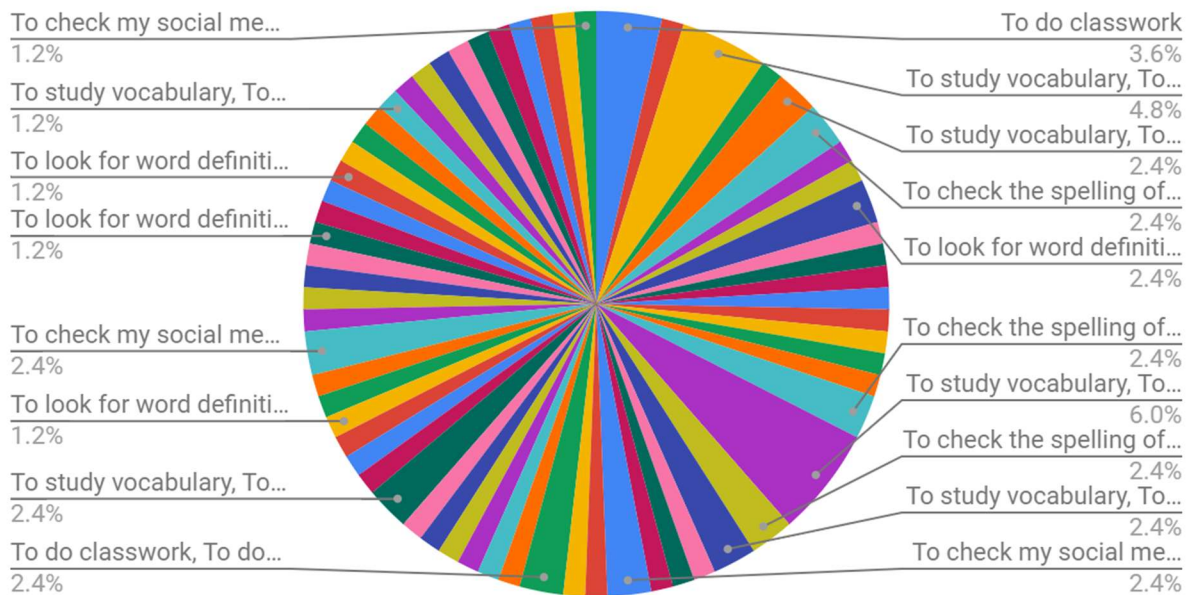
21. When you are at home, do you ever use your Smartphone to do homework?



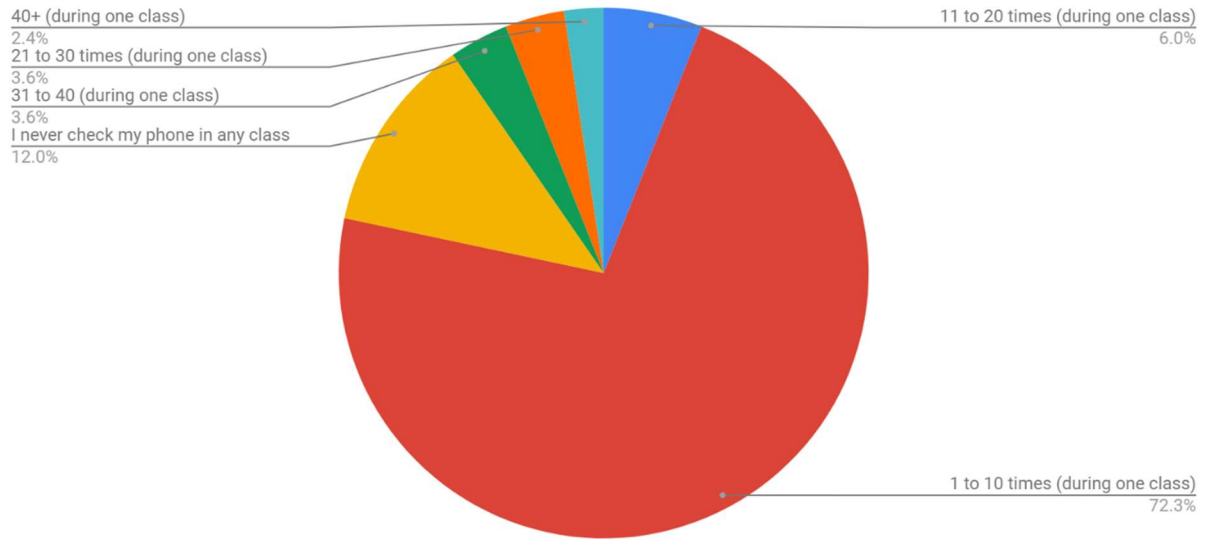
22. When you are in class do you use your Smartphone?



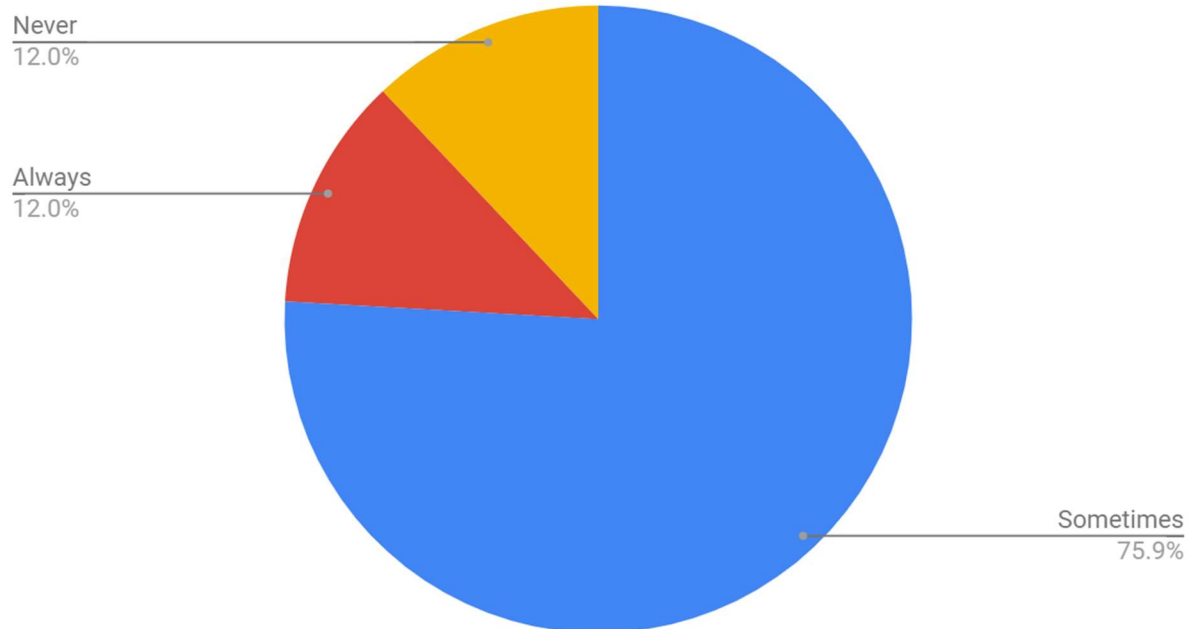
23. When in class what do you use your Smartphone... (check all that apply)



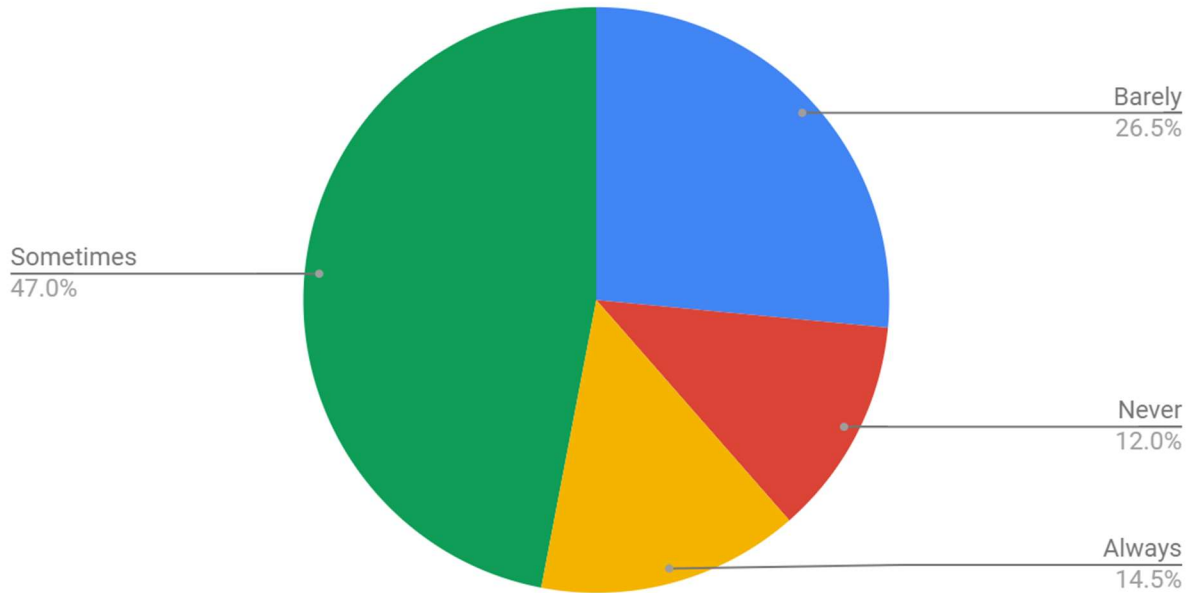
24. How often do you check your Smartphone in a class period for personal reasons?



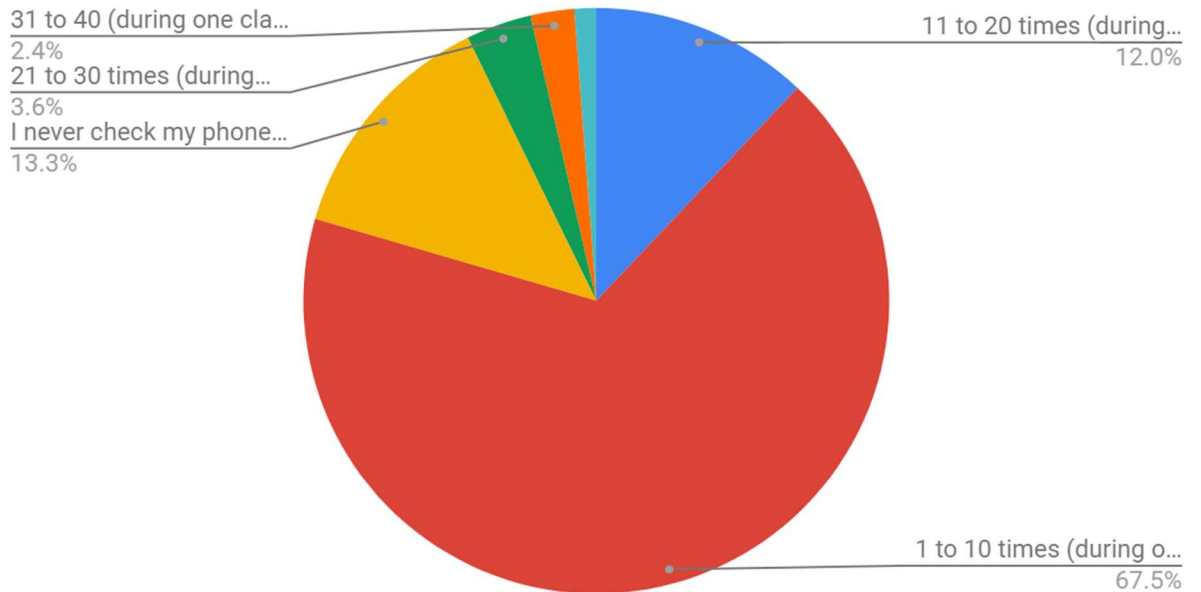
26. Do you read texts on your Smartphone during class time?



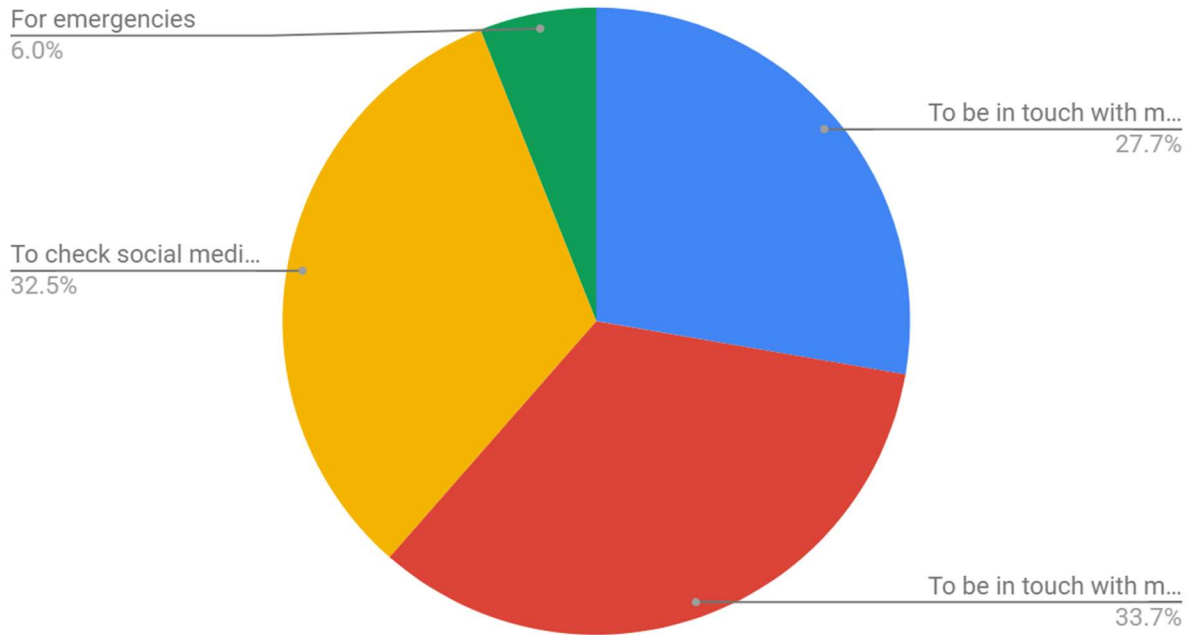
27. When doing your homework, does your Smartphone distract you from your homework?



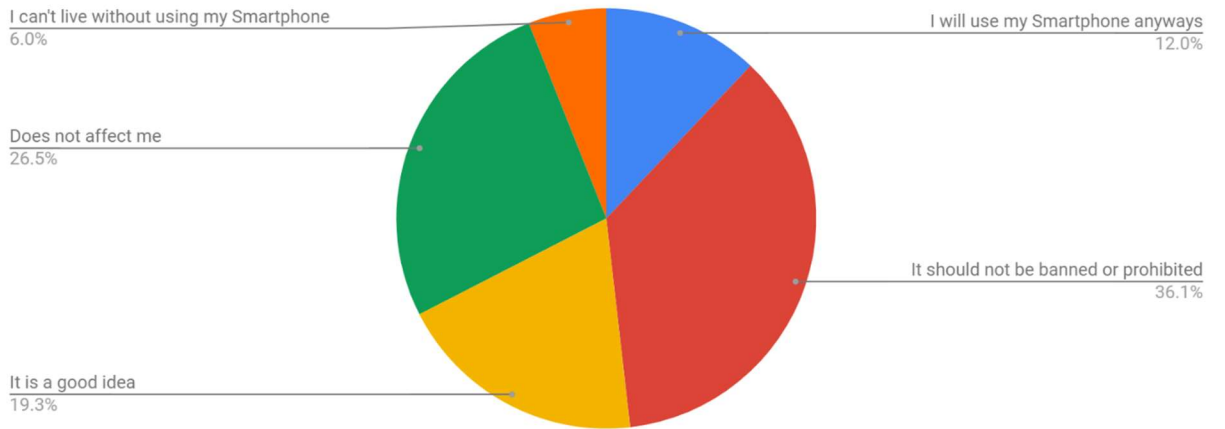
28. How often do you check your Smartphone in class for personal reasons? (You just peek to see if you have message...



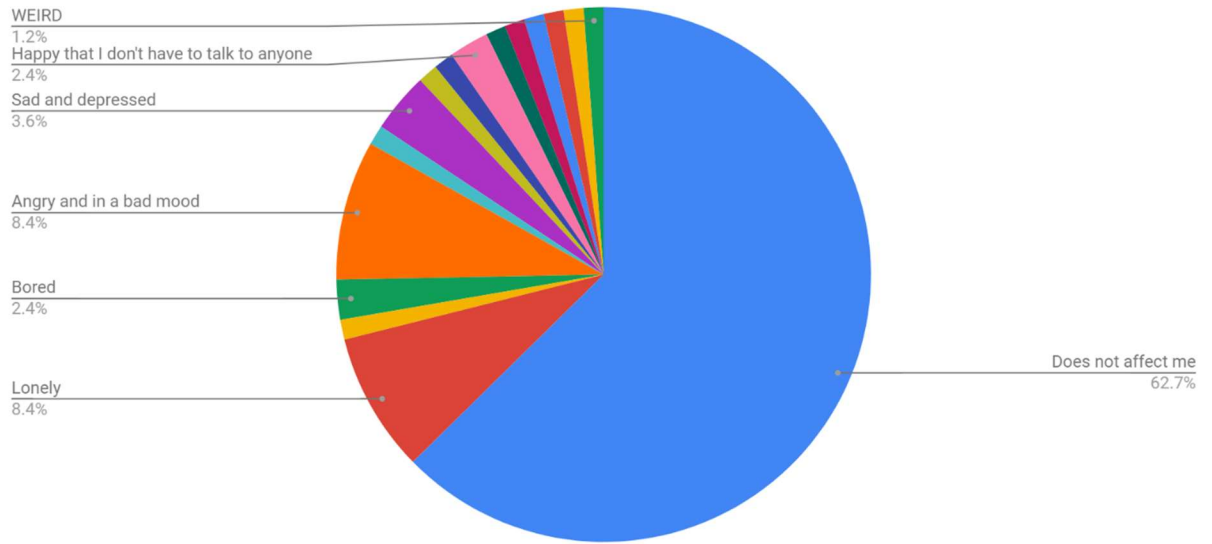
29. In general what do you use your Smartphone for?



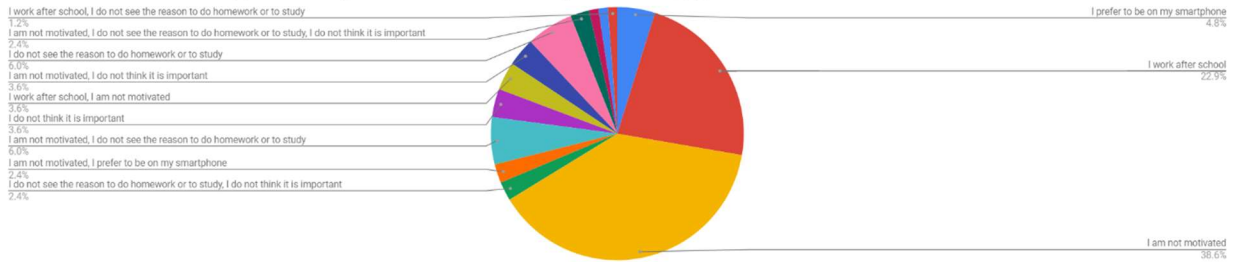
30. How do you feel about banning (prohibiting) the use of Smartphones in all of your classes?



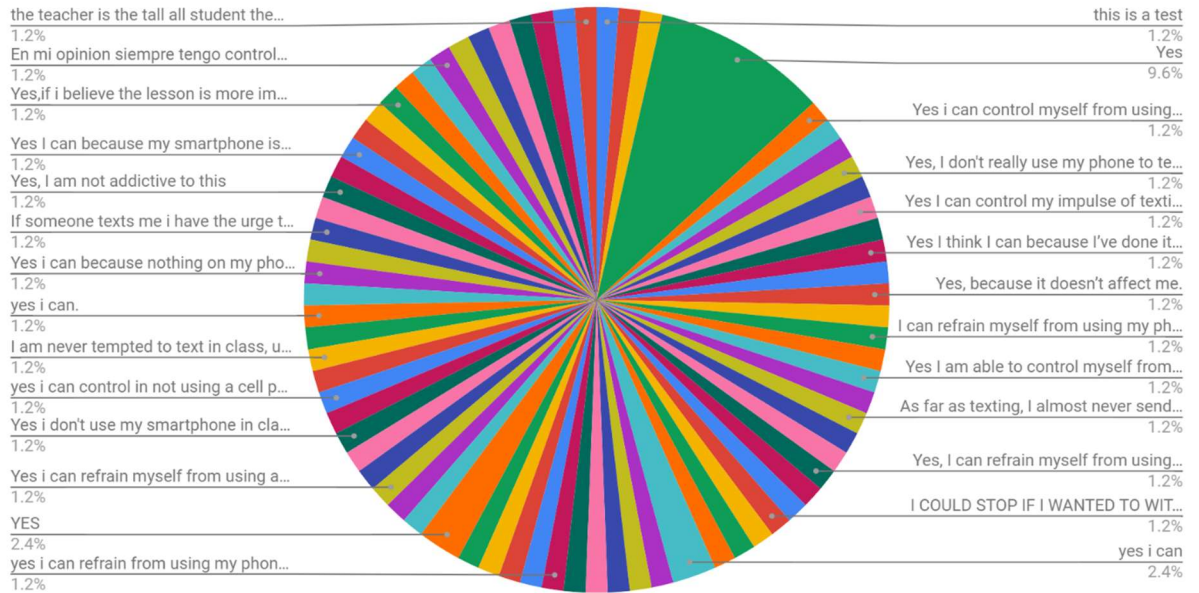
31. How do you feel when you do not have your smartphone with you?



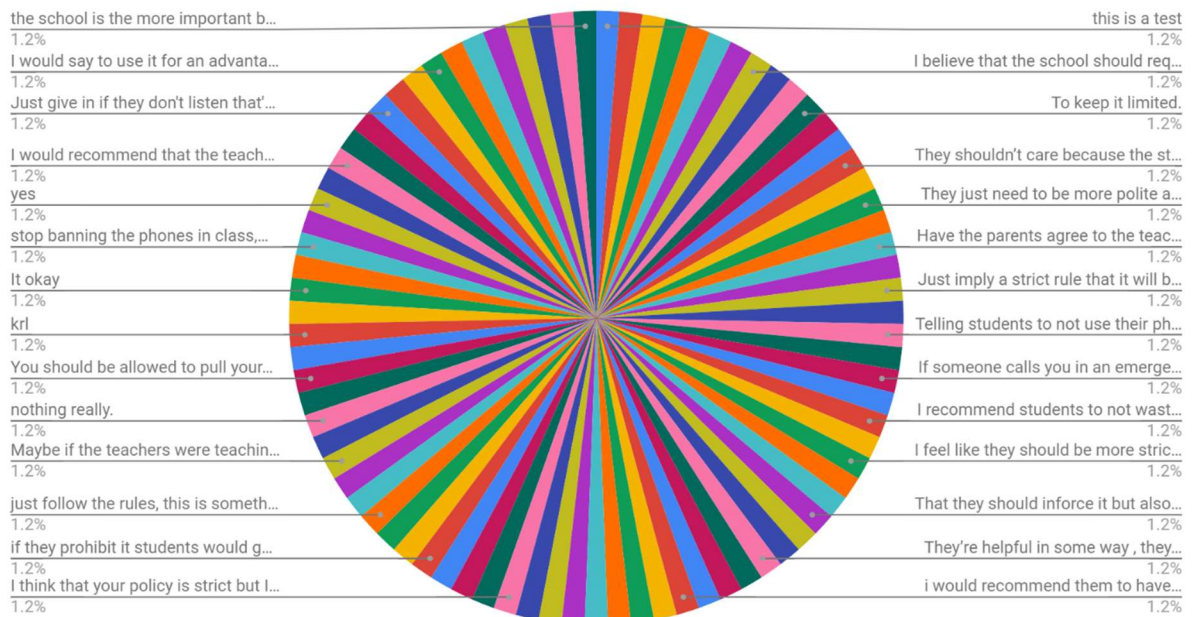
33. Choose the best reasons why you do not do your homework or classwork? (Select all that apply)



34. In your opinion to what capacity (extent) can you actually control your impulse of texting in the classroom? in other words, can you refrain yourself from using your smartphone during class instruction? Yes, No, please explain either way



37. What recommendations, suggestions or ideas would you give to the school and most importantly to your teachers about the use of smartphones in class and in school?



Appendix D (Principal's consent form)

How does using Smartphones in class during instruction affects attention and therefore SLA with High school students?

PRINCIPAL'S CONCENT LETTER

Research conducted by Jose Leon and Jermaine Mcdougald who are acting as a leading researcher. Jose Leon is a student at the Master English Teaching for Self-directed Learning at Sabana University in Bogota, Colombia in agreement with Anaheim University in California, U.S.A. Jermaine Mcdougald is the thesis director of this project.

Research's title: How does using Smartphones in class during instruction affects attention and therefore SLA with High school students?

Principal: Rosemarie Martinez
Gardena High school, Gardena, California, USA

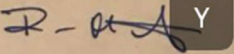
Assistant Principal: Gina Kim

Currently I am getting a master's degree "English Teaching for Self-directed Learning". To satisfactorily fulfill all the requirements established by the master's program, I must carry out a research project that allows me to demonstrate the impact and the application of what was learned during the program and apply it in my pedagogical environment. The main purpose of the study is to benefit the learning process of the students in all my classes. For this reason, I respectfully request your consent to be able to carry out this project at Gardena High School in my classroom.

This study seeks to determine the impact that abuse of smartphone usage has on attention and therefor in learning. For this reason, a pedagogical implementation (survey) will be carried out during the second semester of the academic year 2019. There will be only a digital survey which last no more than 10 minutes (Student's survey, student's interview) and some individual (about 5 students will be interviewed) interviews will be done during lunch time. The implementation of these instruments will not affect or disrupt instruction.


Finally, it is important to clarify that the personal data of the students will be kept in total confidentiality and the information collected during the project will be used solely and exclusively for academic purposes. I thank you in advance for your cooperation.

Sincerely,
Jose Leon

Rosemarie Martinez,  Y MAY 9, 2019

Gina Kim

Appendix E (Sample of student's consent form)

 Universidad de La Sabana	Consent form
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TITLE OF RESEARCH: How does using Smartphones in class during instruction affects attention and therefore SLA with High school students?

HEAD RESEARCHER: Mr. Jose Leon/Jermaine McDougald is acting as thesis director and collaborator

Dear participant,

The Universidad de La Sabana requires the informed consent of any person involved in a study conducted by researchers at the university.

This project examines how attention is diverted by the use of cell-phones in class, specifically the action of texting during class instruction. The main goal of this project is to demonstrate that if attention and awareness is focused on texting during class, students learning will be impacted.

If you agree to participate in this study, a number of data collection instruments will be used to gather information about your participation throughout the project.

Participant Consent

The participant has been given a signed copy of this form to keep.

I agree to participate in this research.

Name: Dulce Nayely Olmas Date: 5/9/19

The ethical aspects of this study have been approved by the Universidad de La Sabana. All data will be kept confidential and all information will be utilized only for educational and research purposes.

The researcher has:

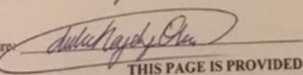
- A. Provided me with a detailed explanation of the procedures to be followed in the project, including an identification of those. I understand I will be asked to participate in the data collection process.
- B. Answered any questions that I have regarding the study.

I understand that:

- A. My participation is voluntary, and I may withdraw my consent and discontinue participation in the project at any time. My refusal to participate will not result in any penalty.
- B. By signing this agreement, I do not waive any legal rights or release you from liability for negligence.

I hereby give my consent to be the subject of your research.

Name: Dulce Nayely Olmas

Signature: 

Tesis

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