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Does the Use of Electronic Devices in-class Cause Distractions to Students in high school?

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Abstract: This essay examines teachers' perspectives towards students using electronic devices in the classroom and did interviews on teachers developing further investigations on the problem students would face when being distracted by using electronic devices doing non-class relevant activities in the classroom. After illustrating the results, this essay concludes that electronic devices cause more disadvantages than advantages, especially in terms of high school students. Several applicable methods and advice are summarized and supplied at the end of this essay in order to help teachers who are looking for a better method tackling the problem of students using electronic devices in the classroom.

Keywords: Laptops and Education, Classroom Teaching, Distraction.

1. Introduction

"Students use the Internet in-class because currently in this digital age, education is not the way it used to be, like maybe twenty or thirty years ago." As one of the teachers answered in this investigation, widespread usage of electronic devices makes it accessible for students to approach iPads and laptops in the school. Nowadays, electronic devices have become one of the standard equipment for students during their study process. Many positive comments are made on students' feeling of motivation when electronic devices appear in their study lives.

Although many students have laptops and planned to use them efficiently in order to enhance their study progress, some faculty members received complaints from students because they cannot collect their attention during the class period. There are many reasons why students find it difficult to concentrate: psychologically, it is due to students' preferences, as one of the Chinese teachers said in the interview, "If students themselves dislike a specific subject, then they will choose to focus on non-class relevant activities in order to waste the class time and wait for class over." And, the relationship between teachers and students is also a dominant component of the reason why students cannot pay attention in class time. If a teacher has a tolerant, friendly and interesting teaching style, students are more likely to try to listen to the class and be more concentrated. Other students complained that they were interrupted by distracted technology users who did not know what was happening in class, what to do next and how to do it.

This essay is going to compare the advantages and disadvantages of using electronic devices in the classroom in the shoes of teachers via interviews. and thus give an illustration of whether the disadvantages surpass that of advantages or not. And this essay will give some suggestions to help some teachers who are struggling with managing students' destruction situations.

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2. Research Questions

2.1. What are teachers' opinions towards students using electronic devices in-class?

The distractions of using electronic devices in-class have already become one of the crucial problems in-class, there are studies like Mccoy which analysed negative influence of using electronic devices would have on students via presenting calculated average time students spend on non-study relevant activities and recording students' self-reflection or level of awareness of adverse impacts using electronic devices would have to solidify she's argument that students are being distracted in the classroom every time they approach to electronic devices [1]. However, there is a lack of survey done on interviewing teachers and taking their personnel perspectives into consideration. Therefore, it is crucial for this study to investigate teachers' viewpoints and further explore the reasons behind it.

2.2. What are teachers' methods dealing with students' distraction on electronic devices?

Although people are continuously looking for better approaches that teachers can use in order to reduce or eliminate students' distraction problems, it is still worth this study to summarize methods teachers are using now and figure out some methods which are widely used by teachers and are proved very successful, and creating a list of several failed methods or methods teachers would no longer use to prevent teachers using them again.

2.3. What are consequences of using electronic devices in-class have on students?

After reviewing some studies, it seems specific benefits and drawbacks because of the usage of electronic devices are almost listed comprehensively. But this study is looking for some potential consequences students would encounter in both the short run and the long run. The terminal lists of adverse consequences can be further discussed and used as targets for future research to do in order to solve these problems.

2.4. Does teachers think high school students are less likely to self-control than university students?

Teachers' results of this question can be used as examples to initiate future sociological investigations discussing if there is a common phenomenon that adolescents lack self-control ability. These results would raise people's attention on children's mental and intellectual development. And certain solutions might be taken in terms of educational and social fields.

3. Literature Review

According to research done by Kane, an individual experiences a single mind wandering every thirty seconds [2]. Under this situation, the importance of attention, is regarded as a scarce supply in the context of 21st century education, especially for class learning. Fortunately, people nowadays already realize the attention-related predicaments students are facing and studies are done on analysing problems related to students' attention and discovering better approaches to enhance in-class learning and teaching quality [3].

One of the predominant study topics is on the distraction effect on students caused by using technology in the classroom. Mccoy did research targeted at college students asking them to depict their behaviours and opinions towards the usage of electronic devices for non-class relevant activities. Among 777 student respondents, more than 80% admitted that they are more likely to miss teachers' instructions and pay less attention when using electronic devices to entertain themselves. Unexpectedly, the research also shows that respondents spend 10.93 hours every school day only

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doing activities including social networking and texting rather than studying [1]. These students actually had exhausting experiences when they were struggling to learn new knowledge. The reason is because their brains were already distracted by non-class-relevant activities [4]. Wei and Wang gave further implications of these behaviours. They noted that college students' in-class behaviours such as texting and multitasking may further develop into a habit over time. And these habits might be defined as automatic behaviours "triggered by the lowest level of consciousness" [5].

Many researches still conclude some positive effects for students and class as a whole. For example, Fitch discovered that with the aid of computers, teachers are able to notice the response of all students through the computer's display. Meanwhile, the access to the internet facilitates interactions between students and teachers and thus enhances in-class participation and increases active learning [6]. Barak's finding illustrated if electronic devices are used judiciously, they can help students engage in the process of active learning during idea sharing, problem solving and pattern exploration. She also figured out that using computers in the classroom enables teachers to relieve concerns relevant to the number of students and the overall arrangement of settings [7]. Partee summarized the three main positive impacts on using electronic devices in-class: stimulate discussion in-class, deliver general knowledge such as lectures and tutor students in a small group or even in person [8]. Despite that, an experiment done by Efaw compared the average score between students who integrated electronic devices in-class periods scored and students who used note-taking approaches. The average score for students who use electronic devices was 86.8, which was critically higher than that of controlled groups (83.5) [9].

Prior studies predominantly focused on students or class as a whole as targets for data collection and then examined some advantages and disadvantages. However, it is important to research if there are other problems which can only be seen from the perspective of teachers. According to Scannell's research, some teachers in Harvard have anti-laptop movements, nixes electronic devices since they interfere students' participation and class discussions [10]. This point of view was opposite to several statements above [6-7]. Similarly, Szaniszlo noted another professor said, laptops in the class interfere with discussion, and with the temptation for many students to check emails or surf online, laptops become unbearable. For example, "In my own class, I've banned laptops" said a lecturer on law at Harvard [11].

4. Research Methods

This research uses International Centre in Ningbo Xiao Shi High School in China as a case study to explore teachers' opinions on students using electronic devices in the classroom. Students in this school is belonged to the International Baccalaureate (IB) educational programs, and they already own at least one electronic device such as laptop or iPad. Teachers, are clearly aware of students' limitations and predicaments balancing the time using of electronic devices. Therefore, as a case study, students and teachers in this high school are both adequate for this study.

The research is done by the form of face-to-face interview, which means a recorder was used to record the communications between the interviewer and interviewees (teachers). The total number of interviewees is 10, and the questions designed are mainly opened question, which means teachers can have multiple choices or express their personal opinions. And voice recording is known by interviewees and interviewees are already permitted their voice being recorded. And the recordings are saved in the form as "name of the teacher" and the "date".

As for data collection, every teacher's answer was listened at least four times, the first two times were used to taking important notes such as the reason why they think the disadvantages outweigh the advantages, or the suggested approach they shared in order to tackle with students' distraction issues. As for the rest two time, replaying the conservation is important to ensure direction quotation of a few of teachers' ideas are copied right and the number of teachers' choices are calculated right.

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And, this study found that it is convenient for researchers to highlight some key words or phrases that may helped to analyse or categorize different opinions into different types of answers.

5. Results and Analysis

Table.1: Teachers' response on reasons they ask students to use iPads and laptops in class.

Q1: For what reasons do you ask students to use iPads and laptops in class?	
Reasons teachers ask students to use iPads and laptops in class	**Number of choices**
Note taken	2
Check definitions of vocabulary	2
Share online resources (power points, videos, teachers' notes)	3
Complete work online (assignments, tests, quizzes, etc)	4
Research articles related to the teaching topic	6

According to Table 1, most of the teachers (six out of ten) encourage students to use laptops and iPads for research purposes. Simultaneously, these teachers explained the advantages of approaching internet resources, for example, "they know more about the teaching topic", "the range of sources students can use increases massively". Students have access to a range of resources throughout the world, such as Google Scholar and other academic sources. They are able to embrace and "immerse themselves in a peer reviewed or authenticated world" so that they can further develop their understanding towards a particular subject. Gradually, this method would successfully result in students' wider perspective or viewpoints beyond their assigned learning in the curriculum. Some teachers (four out of ten) also approved doing online work, as one teacher emphasized that "websites such as the website called Kognity benefit teachers to assessing students' progress and exporting scores, and students can keep reviewing their mistakes online without carrying test papers everywhere". As for some subjects with a long syllabus like IB Geography, one teacher used "electrically works best" when describing how necessary electronic devices are for sharing and receiving resources.

Table.2: Teachers' agreements on electronic devices have more negative impacts on students as whole and students in high school.

Q2a: Do you agree that using iPads and laptops in-class brings more disadvantages than advantages for students as a whole (including university students)?			
Agree	It depends	Disagree	Total
3	4	3	10
Q2b: Do you agree that using iPads and laptops in-class brings more disadvantages than advantages for students in the high school?			
Agree	It depends	Disagree	Total
5	2	3	10

As can be seen in Table 2, when teachers were asked to compare the positive and adverse influences electronic devices have on college students, four teachers chose "it depends". These teachers listed a lot of factors that need to be taken into consideration, for instance, "teacher", "study environment", "class" and "relationship between teachers and students".

Surprisingly, when the question narrows down the range of students into "high school", many of these teachers changed their answers to "Agree". They illustrated that, "many kids cannot resist themselves being distracted", "teenagers lack self-control", "Give them an inch, they will take a mile."

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From teachers' feedback, they shared a common value that within a high school level, teenagers are not responsible enough to handle electronic devices in a proper way, so that the freedom of use electronic devices tends to be an obstacle rather than helping students in learning.

Table.3. Teachers' feedback on consequences of using electronic devices in-class for students.

Q3: What are the main consequences for students using electron devices in-class?	
Key Words/Phrases in Teachers' answers	**Num. of teachers**
I. Short Term Effect	
Distracted	9
II. Long Term Effect	
Superficial reading habit	2
Lack of communication skills	1

According to Table 2, half of the teachers agreed that disadvantages overwhelm advantages. Table 3 involves teachers' concerns of negative effects for students using electronic devices from both short-time and long-time spans. One core disadvantage in short time span is, apparently, students are no longer focused in-class. The word "Distracted" was frequently used when most of the teachers were explaining the weaknesses students would experience. "Because the moment the students come to the classroom, I allow them to use computers, but you can see anything you teach in the room they don't pay attention to."

Long-term shortcomings are more likely to let students lose some significant life ability when they get used to reading online, such as deep reading. "It is more superficial reading on electronic devices than reading a book." "They now have shorter attention span when doing digital reading, and they want information much faster and are not interested in deep-reading." Another problem in the future would be lack of practice of face-to-face discussion. "Especially in an academic setting, you will set around and discuss things. Students are becoming more and more used to communicating on social media online," one English teacher expressed his worries, "if we allow students to use digital devices too often, they just won't develop these skills."

In addition, when depicting these adverse impacts, many teachers used words such as "problematic", "worried" and some even said "I don't know what to do to tackle this problem". These words convey a common feeling for teachers since they found it is hard to solve the issue of increasing level of attention and eliminating students' addiction towards social media, games and all these sorts of entertaining purposes rather than study. Therefore, this research then designed the following questions trying to summarize several suggestions for educators to use or take into consideration when they are trying to reduce or avoid the distraction of electronic devices on students.

Based on Table 4, according to teachers' attempts and experiences, using a detailed instruction every time they ask students to do online work is the most efficient method and applied by the largest proportion of teachers. And it is followed by verbal warning and limited in-class works since they have relatively high approvals in their effective outcomes. And, teachers shared a common perspective that it's suggested not to be too strict and give students harsh punishment, "these will upset your students and stimulate bad behaviour."

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Table.4. Teachers' methods towards on reducing or avoiding distractions on students.

Q4. What do you usually do or not do when trying to reduce or avoid distractions happen on students?		
Methods they have done	**Num. of teachers**	**It's effective.**
Let students read school's policy on restricting students using iPads or laptops for non-class relevant activities.	1	0
Be more active in class, asking more questions.	1	1
Use verbal warning to alarm the students who are caught doing non-class relevant activities online.	8	5
Take away students' electronic devices for a period if they are caught doing non-class relevant activities.	2	1
Design in-class tasks with deadlines before the end of the class.	4	3
Communicate with students about the importance of staying focused.	1	1
Allow students use electronic devices with clear instructions, with particular purposes. (e.g., Use your laptop to access Google Scholar.)	8	8
Methods they do not use	**Num. of teachers**	**It's ineffective.**
Being strict and rigid and punish students.	4	4

6. Conclusion

This research raises serious concerns about the use of electronic devices in the classroom. Teachers being interviewed share a common value that teenagers lack self-control and thus there is still a large gap between their self-control ability and that of university students. Teachers' response also suggested that using electronic devices in the classroom would result in some negative short run consequences such as being distracted, and negative long run consequences, for instance, lack of the ability to deep read and unable to discuss a particular topic or idea in an explicit and clear way. And, this study also listed some recommended approaches for teachers to use in order to tackle distraction problems. The most efficient way is for teachers to give detailed and straightforward instructions to students when they plan to use electronic devices for a particular reason. The next is for teachers to use verbal warning more frequently. In contrast, it is strongly reminded teachers to be lenient instead of being rigid and strict when seeing students doing non-class-relevant activities in the class period. Because negative attitudes are not expected to encourage students to nurture or amend their mistakes in a negative environment. Above all, this essay includes both advantages and disadvantages of using electronic devices in the classroom, and concludes that the disadvantages surpass advantages, but these drawbacks could be further reduced or solved when future research is done.

7. Evaluation

The design of interview questions changed after the first interviewee directly answered the third question when the interviewer was still asking the first question. Later on, the rank of the questions is being rearranged, and some similar questions are deleted, which means the questions became more logical and easier to understand for the following interviewees.

There is a once an interviewed teacher did not understand the meaning of the question, and then gave an answer which was irrelevant to the intention of the question. Hence this answer was

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eliminated from the list of interviewees' answer bank. Simultaneously, it is complicated for interviewer to summarize the core idea of every interviewee's recording, because sometimes an interviewee can talk for 30 minutes only answering 5 questions. Therefore, the interviewer should learn to interrupt interviewees in order to guarantee that almost all the answers are tightly connected with the idea of every particular question. And, the number of interviewees would be relatively small, which means it seems less reliable compared with research with a large database. In order to collect more data and have more diversity of answers, interviews or questionnaires on students could be taken into consideration.

Finally, the field of technology education can further link to the COVID-19 pandemic due to restricted access to offline classes. To be more specific, during the pandemic, students have to use online learning applications to continue their study syllabus, thus despite the factors of distraction, more problems are anticipated to be encountered by students, such as how teacher-student interactions affect students' learning efficiency and scores. Another idea for future study is that, study is suggested to try to involve more than one group of people, for instance, groups such as parents, teachers and students in a country's high school might be an interesting investigation sample. The advantage is that the study is able to collect diverse perspectives from groups of people to answer the research question in a more comprehensive way in regards to their experience and perspectives.

Reference

[1] *Mccoy, Bernard. 'Digital Distractions in the Classroom: Student Classroom Use of Digital Devices for Non-Class Related Purposes'. Faculty Publications, 2013. ResearchGate,www.researchgate.net/publication/257983603_Digital_Distractions_in_the_Classroom_Student_Classroom_Use_of_Digital_Devices_for_Non-Class_Related_Purposes.*

[2] *Kane, Michael J., and Leslie H. Brown. 'For Whom the Mind Wanders, and When: An Experience-Sampling Study of Working Memory and Executive Control in Daily Life'. Psychological Science, vol. 18, no. 7, 2007, pp. 614–21, https://doi.org/10.1111/j.1467-9280.2007.01948.x.*

[3] *Hall, Maureen, and Aminda O'Hare. 'The Power of Deep Reading and Mindful Literacy: An Innovative Approach in Contemporary Education'. Innovación Educativa, vol. 15, no. 67, 2015, pp. 50–59. Research Gate, www.researchgate.net/publication/278017481_The_power_of_deep_reading_and_mindful_literacy_An_innovative_approach_in_contemporary_education.*

[4] *Foerde, Karin, and Barbara J. Knowlton. 'Modulation of Competing Memory Systems by Distraction'. Proceedings of the National Academy of Sciences of the United States of America, vol. 103, no. 31, 2006. Google Scholar, https://doi.org/10.1073/pnas.0602659103.*

[5] *Wei, Fang-Yi, and Y. Ken Wang. 'Students' Silent Messages: Can Teacher Verbal and Nonverbal Immediacy Moderate Student Use of Text Messaging in Class?' Communication Education, vol. 59, no. 4, 2010, pp. 475–96. ResearchGate, https://doi.org/10.1080/03634523.2010.496092.*

[6] *Fitch, James L. 'Student Feedback in the College Classroom: A Technology Solution'. International Journal of Human-Computer Interactions, vol. 52, no. 1, 2004, pp. 71–81. JSTOR, www.jstor.org/stable/30220375.*

[7] *Barak, Miri. 'Wireless Laptops as Means for Promoting Active Learning in Large Lecture Halls'. Journal of Research on Technology in Education, vol. 38, no. 3, 2006. ResearchGate, https://doi.org/10.1080/15391523.2006.10782459.*

[8] *Partee, M. H. 'Using E-Mail, Web Sites and Newsgroups to Enhance Traditional Classroom Instruction'. T.H.E Journal, vol. 23, no. 11, 1996, pp. 79–82, thejournal.com/Articles/1996/06/01/Using-EMail-Web-Sites--Newsgroups-to-Enhance-Traditional-Classroom-Instruction.aspx?Page=7.*

[9] *Efaw, James, and Scott Hampton. 'Teaching and Learning with Laptop Computers in the Classroom'. Educasue Quarterly, 2004. Educause, er.educause.edu/-/media/files/articles/2004/8/eqm0431.pdf?la=en&hash=68AD4912C8E850E326E5794F9AD1CF52BCCCB1DB.*

[10] *Scannell, Tim. 'Banned in Boston: Laptops at Harvard'. Internetnews, TechnologyAdvice, 10 June 2006, www.internetnews.com/enterprise/banned-in-boston-laptops-at-harvard.*

[11] *Szaniszlo, Marie. 'Harvard Profs Lay Down Law: No Laptops in Class'. Freerepublic, 4 June 2006, freerepublic.com/focus/f-news/1643115/posts?page=7.*