

Sapiens or Zappiens: the connected generation learns more, less, or in a different way?

Sapiens o Zappiens: ¿generación conectada aprende más, menos o diferente?

Sapiens ou Zappiens: geração conectada aprende mais, menos ou diferente?

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ABSTRACT

This article is intended to review the literature composed of studies based on the internet use and, more specifically, the use of social networks and their possible impacts on the academic performance. Two decades ago, there was a boom in social network websites, especially Facebook. Since then, researchers began studying the correlations and the effects of using this medium. Some results point to positive aspects, such as the increase in social capital experienced by the users of social networks. At the same time, there are risks related to the act of sharing personal information on-line. Some researches indicate that there is a negative relation between the use of the internet and the academic performance; others demonstrate that establishing this relation is not possible and others. There are also researches stating that there are no differences between the average Facebook user and the average non-user. Academic performance is considered of vital importance while training these youngsters, since it will impact their future professional performances, as well as on the readiness for Defense. It can be concluded that more studies on this subject are necessary, since the question about the relation between the internet use and the academic performance remains largely unanswered. It will be also discussed the concepts of **homo zappiens** and multitasking.

Keywords: Internet. Social networks. Academic performance.

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RESUMEN

*Este artículo tiene por objetivo revisar la literatura de estudios basados en el uso de Internet y, más específicamente, de redes sociales, y sus posibles reflejos en el desempeño académico. Hace solamente dos décadas que hubo una explosión de las redes sociales, sobretodo del Facebook. Con eso, investigadores se detuvieron a estudiar las correlaciones y efectos del uso de ese medio. Algunos resultados indican aspectos positivos, como el aumento del capital social de los usuarios de las redes. Al mismo tiempo, existen riesgos relacionados a la práctica de compartir informaciones personales en la red. Algunas investigaciones apuntan que existe una relación negativa entre el uso de la Internet y el desempeño académico, mientras otros afirman no haber sido posible establecer tal relación. Otras afirman no haber diferencia entre la media de usuarios y de no usuarios del Facebook. El desempeño académico es considerado de extrema importancia en la formación de esos jóvenes, una vez que se va a reflejar en el desempeño profesional futuro y, también, en la propia prontitud para la Defensa. Se puede concluir que hay necesidad de más investigaciones sobre el tema, una vez que permanece, en gran parte, sin respuesta, la indagación de la relación entre redes sociales y desempeño académico. Son abordados, todavía, los conceptos de **homo zappiens** y multitarea.*

Palabras clave: Internet. Redes sociales. Desempeño académico.

RESUMO

*Este artigo tem por objetivo revisar a literatura de estudos baseados no uso de Internet e, mais especificamente, de redes sociais, e seus possíveis reflexos no desempenho acadêmico. Há apenas duas décadas houve uma explosão das redes sociais, sobretodo do Facebook. Com isso, pesquisadores se detiveram a estudar as correlações e efeitos do uso desse meio. Alguns resultados indicam aspectos positivos, como o aumento do capital social dos usuários das redes. Ao mesmo tempo, existem riscos associados à prática de compartilhar informações pessoais na rede. Algumas pesquisas apontam que existe uma relação negativa entre o uso da Internet e o desempenho acadêmico, enquanto outros afirmam não ter sido possível estabelecer tal relação. Outras afirmam não haver diferença entre a média de usuários e de não usuários do Facebook. O desempenho acadêmico é considerado de extrema importância na formação desses jovens, uma vez que vai se refletir no desempenho profissional futuro e, também, na própria prontidão para a Defesa. Pode-se concluir que há necessidade de mais pesquisas sobre o assunto, uma vez que permanece, em grande parte, sem resposta, a indagação da relação entre redes sociais e desempenho acadêmico. Abordam-se, ainda, os conceitos de **homo zappiens** e multitarefa.*

Palavras-chave: Internet. Redes sociais. Desempenho acadêmico.

1 INTRODUCTION

From the 1970's on, there was a huge world change in terms of communication: the advent of the internet, which took place in two phases. The first one, so called **web 1.0**, users were mere content consumers, and the main product was the vast amounts of available information. In the second one, known as **web 2.0**, users could create content and make it available to the virtual community through the so-called social networks.

Under the military point of view, these technological innovations also resulted in great transformations. Through the control of the electromagnetic spectrum and logical networks, an intangible dimension, known as the fourth dimension, was added to the battlefield. Based on this new dimension, different concepts of war were developed, under many different names. They constitute what we call today the new wars (AZEVEDO; MOTA, 2012).

Over the last few years, social network websites have experienced a boom, with a significant increase in the number of users, such as Facebook (FB). Hence,

many different studies have been performed in order to understand the impacts and the potential effects of the use of these networks (PASEK et al., 2009). Many studies revealed a positive relation between the use of FB and social capital (ELLISON et al., 2007; PASEK et al., 2009; and VALENZUELA et al., 2008).

Veen and Vrakking (2009) proposed the term **homo zappiens** to refer to the current generation of people who are part of the digital life ever since their births, and who learn in a considerably different way from the previous generations. Children who are part of this generation do their homework while watching videos on *You Tube*, sending instant messages, using FB, **surfing** through websites, in such a way that it seems they are performing these activities simultaneously, that is, they are multitasking (VEEN; VRAKING, 2009). However, Kirschner and Karpinski (2010), trying to correlate the use of FB use and academic performance, question whether those children and young adults are really capable of doing all of that efficiently, effectively, and without negative consequences to the main task, that is, the authors wonder if these children and youths

are actually capable of multitasking, if they really are **homo zappiens**.

Kirschner and Karpinski (2010) state that human beings are not actually capable of multitasking. At best, what they are actually capable of doing is to change one activity for another. According to them, one can only multitask in activities that do not require the act of thinking, such as chewing gum, walking and talking at the same time. Still according to them, the current generation has developed the ability of quickly switching one activity for another, but that does not mean that it is something positive or beneficial for the learning process. Kirschner and Karpinski (2010) that the main finding of their study is the fact that the data show a significant negative relation between FB use and academic performance, and that there are some questions that are still unanswered in studies on this issue. With regard to the current technological trends more specifically, the easy access to computers and to the internet in an unprecedented level in university campuses made it easier for the students to engage themselves in multiple activities when they are trying to study. Although it was not conducted in their study, the same authors state that, according to the available literature, trying to perform two cognitive processes simultaneously can have a negative impact on the efficacy and efficiency of the performance of both tasks.

Under the perspective of military training, academic performance is considered of vital importance in the training of these young students, since it will have an impact on their future professional performances, as well as on the readiness for Defense. For this reason, and considering the evidences that there really is a youth increasingly more connected to the internet and to social networks, for an extended and increasing amount of time, the question that is posed to us is whether the habit of accessing social network websites by the cadets of the Brazilian Air Force Academy (AFA) could have any relationship with their academic performance. By studying the correlations among the students' grade point average (GPA), which is an indicator of performance, and the time they spend using social networks, it is believed this relation could be investigated.

The present article is based on a theoretical revision of a study that investigated the influence of social networks on academic performance and on the military evaluation of the AFA cadets, youths aged between 17 to 26, who are students at one of the Brazilian Air Force (FAB) training schools. The focus of the study was the frequency they access social network websites, which media they use to access them and what their goals and motivations are.

2 HOMO ZAPPIENS AND MULTITASKING

Veen and Vrakking (2009) consider that children from the current generation develop, on their own and without training, the metacognitive abilities necessary for learning, which are based on investigation, discovery, the network, the experience and the collaboration in an active, self-organized and self-regulated way, in order to solve problems.

Apart from those authors, Beastall (2008 apud KIRSCHNER; KARPINSKI, 2010) has stated that this generation of children and young adults has had a relation with technology since they were born. Prensky (2001) has also observed the familiarity and trust between this generation and the Information and Communication Technology (TIC) and described it as living beings, who are immersed in technology and use it surrounded by computers, videogames, digital sound systems, video cameras, mobile phones, and many other gadgets and tools of the digital age.

Prensky (2001) argues that children and young adults of today have an innate technological competence, which can be characterized as multitasking. Generally, he says, the encounters with technology make it possible for these children to experience how sounds, images and texts interact, which may be crucial for their success in school and for the development in the digital world as a whole. On the other hand, Owen (2004 apud KIRSCHNER; KARPINSKI, 2010) has shown that most children living in advanced economies, spend less than 30 minutes a day in front of the computer.

Some recent studies question the existence of a true **homo zappiens** in countries such as Austria, Australia, Canada, Switzerland and the United States (BULLEN et al., 2008; EBNER; SCHIEFNER; NAGLER, 2008; KENNEDY, 2007; KVAVIK, 2005 apud KIRSCHNER; KARPINSKI, 2010). Such studies have shown that college students do not have a profound technology knowledge. They know how to use **Microsoft Office** softwares, how to send emails and texts, how to use FB and surf the internet. It seems they do not recognize the enhanced functionality of the apps they have and use, states Kvavik (2005), since, within a learning environment, the functionality is limited to passively consuming information or downloading the teachers' grades.

According to Kirschner and Karpinski (2010), there is an assumption that the children of today acquire new multitasking skills at the same time, and those skills can be employed by them in the learning environment, since education, as it is known, is frustrating for them. Unfortunately, those authors stress, most of the empirical

research indicates that these children do not own these skills, or even that multitasking may harm these children's information processing.

3 RELATIONS BETWEEN THE USE OF SOCIAL NETWORKS AND ACADEMIC PERFORMANCE

Junco (2012) states that a small number of previous researches demonstrated the relation between FB use and GPA. He says that, even though there is popular and professional interest in knowing how FB use impacts the students' learning, researches on this subject are still scarce. He argues that, in 2009 and 2010, researchers from Pew Research Center's Internet & American Life Project (PIALP) found that around 67% to 75% young college students used social networks. By the end of 2010, a study performed by the EDUCAUSE Center for Analysis and Research with 36,950 (thirty-six thousand, nine hundred and fifty) students from 126 (one hundred and twenty six) American universities and one Canadian institution revealed that, among the 90% of students who used social networks, 97% stated that they used FB daily (SMITH; CARUSO, 2010 apud JUNCO, 2012).

In another study, students said they spent around 1h 40m daily on FB (JUNCO, 2011). Junco (2012) comments that three other studies on the relation between FB use and grades were published at the same time of his own. According to him, Pasek et al. (2009) performed a study and found that there was no relation between FB use and academic performance. Kolek e Saunders (2008) also discovered no differences in GPA between students who were FB users and those who were not.

Kirschner and Karpinski (2010), on the contrary, found that FB users reported lower GPA than non-users. Besides that, FB users reported that they dedicated less hours a week to their studies than non-users. Junco (2012) states that lack of consensus in the results may be explained in part by the fact that few studies on this issue were limited by their measurements and/or sample selection.

Junco (2012) declares that, even though the time spent on FB might not be problematic on its own, spending large amounts of time on this social network draws the student's attention away from the academic work. Dedicating less time to the academic work will impact on academic success negatively, and will be measured, in this case, through the GPA, he states. Such results indicate that, in order to obtain a real impact on the GPA, students would have to spend enormous amounts of time on FB, according to this author. Activities such as chatting with friends on FB, writing posts on your current status and seeing what your friends are doing were the strongest indicators of the student's GPA, he states. At the same time, simply checking FB is not related to

the time spent on this social network due to certain reasons (JUNCO, 2012).

Junco (2012) points out as the first reason, the fact that there was only a moderate correlation between checking FB and the time spent on FB (Pearson's $r = 0.422$; $p < 0.001$). Secondly, the author states that it seems clear that the model used to check FB indicates a substantially lower proportion of variance in the general GPA, both for the evaluation of the β parameters and the evaluation of the adjusted R^2 (the coefficient of determination in linear regression) in comparison with the model used to measure time spent on FB. That makes sense, he declares, once one considers the differences between the following facts: a student may connect to FB once and spend two hours using this network, while another one might connect to FB many times a day, and spend only two minutes on-line every time one does it. Lastly, the average amount of time students spent on FB, was low, every time the site was checked, revealing that the moderate correlation between checking FB and the time spent on it cannot be explained by the act of checking FB sometimes, but the large amounts of time on-line once they are connected.

Jones et al. (2007) consider that the internet has become part of the lives of almost every college student, and most of them consider the internet extremely beneficial to their education, because it helps them perform their searches and communicate with their peers and professors. Meanwhile, a small number of them experience academic problems as a result of the excessive amount of time they spend on-line, according to Anderson (2001), Jones et al. (2007), and Morahan-Martin and Schumacher (2000 apud ELLORE et al., 2014).

Ellore et al. (2014) say that one of the most common uses of the internet is to interact through social networks, such as FB, *Twitter*, *MySpace* and *LinkedIn*, and that researches point out that FB is the most popular social network. Hargittai (2007) and Jones and Fox (2009) declare that around 85% to 99% of college students use FB. The authors say that, even though it is known that a high percentage of these students are using FB, the use of this instrument may not be the only factor to impact academic performance. They also state that the amount of time of use of these on-line media by college students with educational purposes compared with the amount of time spent on-line with non-educational purposes may also significantly determine the students' academic success.

Ellore et al. (2014) argue that many studies have discussed the actual and the perceived role that the internet plays on the students' academic performance, but very few have analyzed the actual role of the internet on academic performance based on the amount of hours spent on-line (ENGLANDER et al., 2010 apud

ELLORE et al., 2014). Even though many studies have presented an analysis of the role of the internet on academic performance, Ellore et al. (2014) consider both the perceived and the actual role the internet plays on the academic success of the students.

Ellore et al. (2014) also mention that, in a study conducted by the American College Health Association (ACHA) in 2007, the researchers observed that, out of a group of 20,507 (twenty thousand, five hundred and seven) students, only 15% were negatively influenced by the use of the computer or the internet. Even though most of the researches on internet use by students present a positive association with the perceived academic performance, when it comes to the actual performance, the results are either not clear or they are not statistically significant (ENGLANDER et al., 2010 apud ELLORE et al., 2014; FUCHS; WOBMANN, 2005 apud ELLORE et al., 2014; HUNLEY et al., 2005 apud ELLORE et al., 2014). They also mention a study by Kirschner and Karpinski (2010) that points out to the relationship between the students' GPA and its negative significant effect on the amount of time spent studying weekly; and that the study time decrease may have an indirect effect on academic performance.

Ellore et al. (2014) conducted a research in a university in the US in order to try to find out the impact of internet use on academic performance, FB use, the use of on-line media for educational and non-educational purposes, multitasking, and the interest of the students in the university. They state that they could not find anything to back the hypothesis that the perceived internet use has a significant impact on the perceived academic performance. They also concluded that the actual daily internet use does not actually impact the students' academic performance, and that the amount of time spent on FB does not have a significant relation with academic performance.

Kirschner and Karpinski (2010) performed their studies with 102 (one hundred and two) undergraduate and 117 (one hundred and seventeen) postgraduate students from a public university in the American Midwest. The three main goals of this exploratory investigation were: to evaluate whether there was a difference in the academic performance of college students who were FB users and non-users; to describe a small sample of users and non-users in a Midwestern American university; and to examine the reasons given by the users to explain their impressions of the impact or lack of impact on FB use in their academic performance.

Regarding the differences in academic performance, the analyses of Kirschner and Karpinski (2010) that FB users and non-users are significantly different

from each other: FB users got lower GPA because they spent less hours a week studying in comparison with the group of non-users of this social network. Even though the amount of time spent on-line for both groups did not vary much, the study indicated that there is a difference in the study strategy between users and non-users. Besides that, the study revealed significant differences between undergraduates and postgraduates' GPA: undergraduates reported higher GPA than the postgraduates.

According to Kirschner and Karpinski (2010), their findings may suggest, among other things, that some people are simply more inclined to use FB than others. The main finding is that the data show a significant negative relation between FB use and academic performance. These researchers argue that FB use, or the use of other social networks, is a multifaceted phenomenon, in which many factors can have an impact on other factors. The authors compare their study to an iceberg: only the tip has been highlighted even though they are certain of the existence of a hidden lower portion, which may be harmful if one is not careful.

Using multiple approaches, Pasek et al. (2009) investigated whether there is in fact a relation between FB use and GPA. First, they examined a sample of 1060 (one thousand and sixty) freshmen of University of Illinois at Chicago (UIC). After that, they examined this relation on a cross-sectional sample, representing youths aged between 14 to 22. Besides that, they examined the changes in the GPA of those students between 2007 and 2008, through a longitudinal panel representing American youths aged between 14 to 23. The data for the last two studies were obtained from the National Annenberg Survey of Youth (NASY). It is important to clarify that the control variables for age, gender, race/ethnicity and socioeconomic status were used in both studies.

Pasek et al. (2009) reported that the three studies indicated a strong negative relation between the GPA and FB use. On the contrary, all three studies found a variety of results that reiterate the fact that the correlations must be considered within their environmental and methodological contexts, and should not be generalized. The results point to the inexistence of a negative relation between FB use and academic performance. Among the analyses, two of them suggest that the users did not have a greater or smaller tendency to have high GPA when compared with the GPA of the non-users. In the third study, evidence that FB use was slightly more common among those individuals with better grades were found. That goes against Kirschner and Karpinski's findings (2010), who highlight the fact that one should

not consider that the study will provide a definitive answer, especially because FB came to be in 2004, and the environment is constantly evolving.

4 CONCLUSION

Only two decades ago social network websites experienced a boom, mainly FB. This mass expansion of the new technologies led some researchers to a concern about the impact of these networks on the real world. Therefore, these authors began studying the correlations and the use effects of these media. Some results pointed to positive aspects, such as the increase in the social capital of the users of these networks. At the same time, risks associated with the habit of sharing personal information on-line were also pointed.

The lack of consensus in the results is in part due to the fact that the studies were limited by their measurements and/or the selection of the samples, as Junco (2012) argues. Kirschner and Karpinski (2010) state that more researches on this issue are needed, because the question about the relation among social networks/technology and academic performance remains largely unanswered.

The present study's theoretical review took into consideration the importance of the academic

performance for the military training and future professional performance. After establishing the hypothesis that the social network phenomenon could be somehow related to academic performance, authors who investigated this relation in their studies were identified.

These authors were considered relevant for this research because they attempted to answer the same question that guided the present study, that is, whether there could be some relation between the use of social networks and academic performance. Therefore, trying to find the answer to this question seemed to represent a contribution to the improvement of scientific knowledge.

One limitation of this research is the fact that the measurements of the amounts of time were self-reported, and, therefore, the precision of these data cannot be guaranteed. In order to eliminate the possible distortions caused by perception failures during the collection of self-reported data, it is suggested that, in a future study, the evaluations of the actual time spent on social networks should be made through monitoring or through other methods of connection. The amount of time the students spent on-line performing academic activities could also be measured.

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