

Is Your University Ready For the Ne(x)t-Generation?

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Abstract: At Graz University of Technology a survey about the hardware equipment and the Web2.0 skills among students of the first semester took place for the second time. This paper reflects the results of that two years evaluation. It answers the questions whether the net-generation already has arrived at universities or not and which consequences this fact has on the teaching and learning behaviors as well as infrastructural aspects of a university. Although young students are technologically increasingly well equipped they do not exhaust the potential of their devices or the potential of uncommon Web2.0 applications yet. Nevertheless the applications and communicational ways of a student's average usage are signals not to be ignored by a university management. They not only indicate a dawning basic change of a typical student's life but demand a rethinking of essential structural elements at universities right now.

Introduction

In 2001 Marc Prensky stated in his famous article (see Prensky 2001) about "Digital Natives" and "Digital Immigrants": "Our students have changed radically. Today's students are no longer the people our educational system was designed to teach". Since then we have an ongoing debate throughout the academic world as well as different media channels whether students with enhanced ICT skills have already arrived or not. The situation becomes much more complex because of the growing possibilities and new ways of working with the World Wide Web especially concerning the influences of Web 2.0 (O'Reilly 2004). Consequently Stephen Downes (Downes 2005) coined for the first time e-Learning 2.0 by combining Web 2.0 application with learning and teaching behaviors.

First research works are reporting about the use of Weblogs (Luca & McLoughlin 2005) (Farmer & Bartlett-Bragg, 2005), Wikis (Augar et al. 2005) (Caddick 2006) (Ebner et al. 2008) as well as podcasts (Evans 2007) (Towned 2005) and micro-blogging tools (Ebner & Maurer 2008). From a scientific point of view Web 2.0 applications (YouTube, Wikipedia, Flickr, Twitter ...) and tools (Weblogs, Wikis, podcasts ...) are used to support educational settings. The studies are documenting that these new technologies enhance the traditional face-to-face lecturing and that e-Learning as it had been understood in its early years is changing to new dimensions. Both collaboration and communication, important key factors of learning, can be supported in a new way. Bearing in mind that learning is a basic cognitive social process and proceeds through conversation (Dewey 1916) (Holzinger 2002), it can be expected that technology enhance learning in a meaningful way.

It can be summarized that the first steps using Web 2.0 technologies for educational settings have been successfully implemented (Ebner 2008) and for sure have exceeded experimental stage at all. Consequently the next step to be done is to bring these possibilities to the mass. But before thinking about a bigger rollout we have to think about the users and the available infrastructure which is offered to them. We have to answer some basic questions like "Are students familiar with these technologies?", "Are the devices of the students appropriate to fulfill all requirements

needed?" and "How must be the infrastructure of a university be changed and adapted to meet these requirements of modern students?". Such questions lead to the debate about "Digital Natives".

Digital Natives, Net-Generation or "What Would You Call Them"?

By concentrating on different research studies as well as other popular media channels according to this subject a lot of different terms occur: "Net-Generation" (Tapscott 1997), "Digital Natives" (Prensky 2001), "Generation @" (Opaschowski 1999) or "Homo Zapiens" (Pevlin & Bromfield 2002). They are all describing more less the same: There is an upcoming generation that cannot imagine living in a world without digital technologies. They are using mobile phones and the Internet as naturally and self-evident in their daily life just like the mass uses television. Oblinger (Oblinger & Oblinger 2005) (Oblinger 2005) was talking about different habits of this generation to emerge such as multi-tasking and new ways of communicating with each other. Similar Green & Hannon (Green & Hannon 2007) stated, "That the use of digital technology has been completely normalized by this generation and it is now fully integrated in their daily life".

Seen from a serious research point of view it must be stated that many of such publications lack on solid data underlining their theories. During the last years a number of different studies have been undertaken to get a deeper insight about if there already had been a big change in ICT skills amongst students. Conole (Conole et al. 2006), Bullen (Bullen et al. 2008) and Margaryan (Margaryan 2008) are pointing out that students are using new technologies in their everyday life but the use within their training institutions is simply moderate. Schulmeister (Schulmeister 2008) made a comprehensive summary about the whole discussion and concluded that there are some changes but not in the predicted way of different authors. Two big studies in the German-speaking world are reporting similar. The JIM Study (JIM 2008) pointed out that for the first time in history our youth (12-19 years) prefers the World Wide Web more than television. On the other side the HIS study (Kleimann et al. 2008) claims that the use of Web 2.0 technologies amongst students is moderate.

The Study

In 2007 Graz University of Technology (TU Graz) decided to address to this subject too and carried out a detailed study about the competencies and infrastructure of our first year undergraduate students. This publication compares some of the results covering both surveys in the years of 2007 and of 2008 amongst the beginners at TU Graz.

The acquisition of data took place in the course of a two days information event for newcomers at TU Graz the so called "Welcome Days 2008". The "Welcome Days 2008" were held on the first two days of the new semester on 30th of September and 1st of October 2008. After a series of presentations of different services, administration and curricula topics the student were asked to fill out a paper pencil survey. Although it would have been of no technical problem to arrange an online evaluation the quota of response would never have been that high as in case of paper survey. 98% of the attendant students handed over an evaluable questionnaire. This is a sample of n=821 which equates to 56% of all first year students (status December 2008). For this paper compares both surveys it must be said, that the time the survey took place in 2007 had been two weeks after the beginning of the semester and not at the very beginning as in 2008th survey.

The survey was splitted into two parts; the first summarized the topics about internet, digital communication- and e-Learning platforms as well as Web 2.0 application usage. The second focused on the content and management of the "Welcome Days 2008" itself. This paper only deals with the first part of the survey. The students were asked about their technological equipment according to (mobile) devices and internet connection. They had to state which way of digital communication they prefer and which experiences they have with content- or e-Learning platforms. According to Web 2.0 activities they had to answer more differentiated in case they know about the several item. Do they only know it; how do they use it, only passively by reading or consuming or also actively or even for learning efforts?

Results and Findings

Research Question 1: Equipment

Research Question 1 highlights the technological equipment of the students they are using in their everyday life. They had to check several devices from a list containing “Laptop”, “iPod”, “iPod with Video”, “Standalone MP3-players”, “PC”, “Mobile”, “Mobile with internet access” and “Mobile with WLAN”. In difference to the survey of 2007 the option “Mobile + www” has been added to this list of selection. The results can be seen in Figure 1.

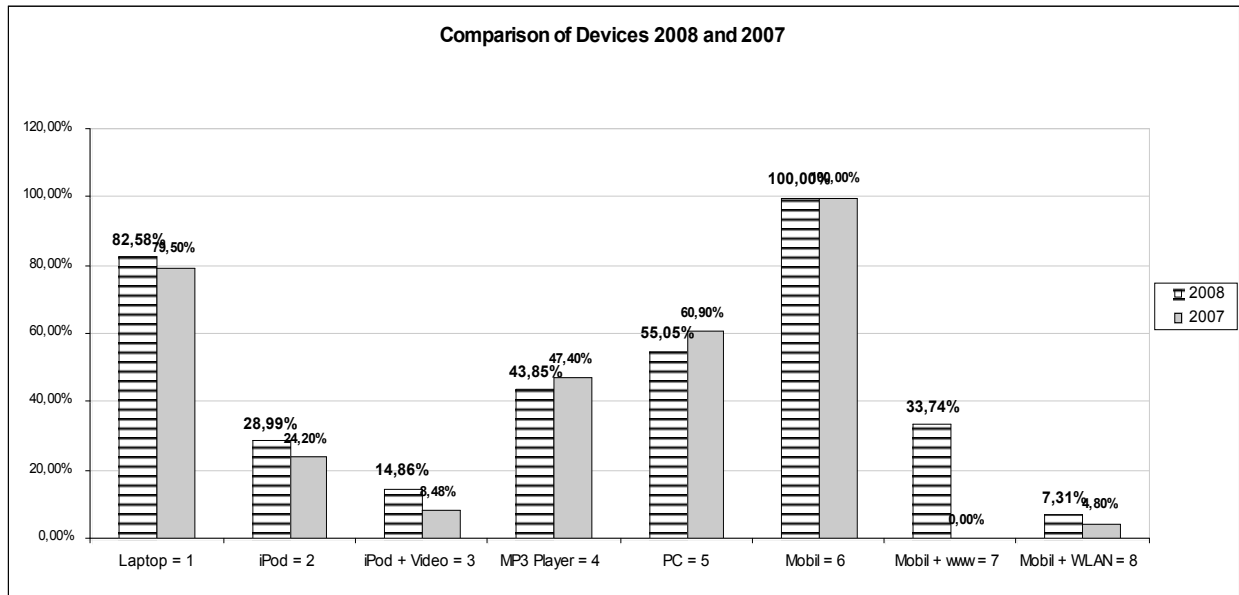


Figure 1: Comparison of Devices used by first year’s student at TU Graz; Selection “Mobil + www” had not been asked in 2007th survey

The percentage of those who obtain a laptop is slightly increasing. Every student has a mobile phone. Nearly every third student has a mobile with internet access. The number of those who’s mobile has WLAN access is definitely increasing whereas the number of students owning a PC seems to regress for the benefit of mobile devices. Nevertheless close to half of all beginners have both laptop and PC. Furthermore a trend can be assumed focusing on the usage of MP3 playing devices. The usage of iPods (without or with video playing functionality) is on the rise but standalone MP3 Players are used less.

Research Question 2: Internet Access

The second research question addresses the Internet access at student’s home. The list of selection covered “No Access”, “Modem or ISDN”, “ADSL, Cable or other broadband”, “Mobile (UMTS, HSDPA …)” and “Others”. Figure 2 displays the results. The high peak of “No Access” in 2008th survey results from the fact that the survey was taken at the second day of the semester and not two weeks after the beginning of the semester as it had been done in 2007. Probably not all students have arranged their new home with internet access at the time of survey but may do so very soon. If this is not taken into account still the conclusion remains that the mobile internet connectivity is strongly increasing for the benefit of all other internet connections. 27.7% of all students with internet connection have a mobile one, whereas 17.2% had it last year (both data are not shown in Fig. 2). The most common internet connectivity still remains ADSL. The sum of the values exceeds 100%, which points out that some students have more than one internet connection at hand.

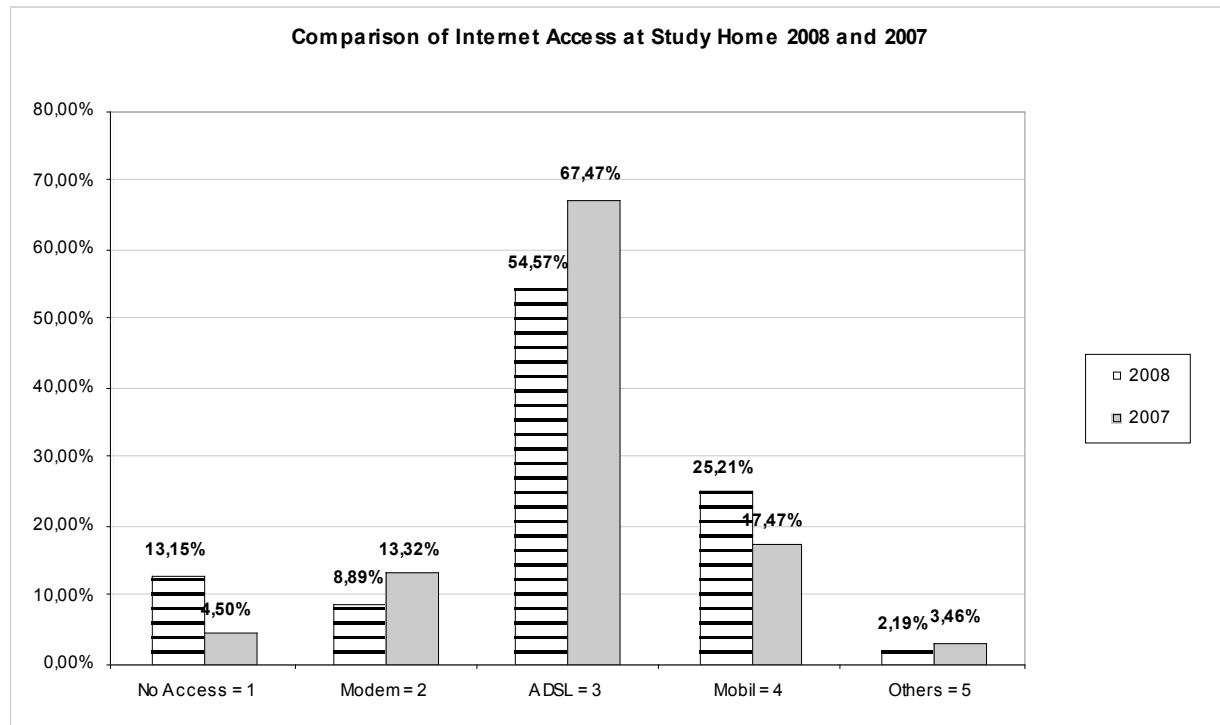


Figure 2: Comparison of Internet Access at Study Home of first year’s student at TU Graz; The high peak of “No Access 2008” results from the fact that the survey was taken at the second day of the semester and not two weeks after the beginning of the semester as it had been done in 2007.

Research Question 3: Use of Digital Communication Tools

The third research questions deals with the usage of communication tools. On a scale of 1 to 3 (1 means “never”, 2 means “some times”, 3 means “regularly”) the students had to quote their attitude towards communication using “E-Mails”, “Newsgroups / Forum”, “Instant Messaging”, “Skype”, “Other Voice-Over-IP” and “Others”. Table 1 has the results of 2007 and 2008. The columns titled with “N %” reflect the number of students that have checked that selection anyway. So it can be stated that digital communication in common is still rising. There is a notable increase according to the publicity of Voice-over-IP technology although the usage remains low besides Skype. Email remains the number one digital communication tool.

	N % 07	N % 08	Mean 07	Mean 08	Stand Dev 07	Stand Dev 08	Med 07	Med 08
e-Mail	99,83	99,76	2,92	2,89	0,29	0,32	3	3
Discussion Forum	93,25	97,44	2,12	2,03	0,72	0,72	2	2
Instant Messaging	93,60	95,62	2,31	2,21	0,80	0,80	3	2
Skype	92,56	96,47	1,92	1,82	0,84	0,80	2	2
Other VoIP	83,91	91,60	1,39	1,35	0,64	0,62	1	1
Others	21,11	26,80	1,40	1,38	0,74	0,74	1	1

Table 1: Use of common communication tools

Research Question 4: Use of E-Learning Platforms at Schools

A further question queries the topic of how popular are e-Learning platforms and homepages for learning efforts in general. The students had to point out their experiences towards such platforms using the scale of research question 3. There is no significant change in the behavior of the usage of platforms between the two years. The majority reported no or occasional use. It can be pointed out that e-Learning is not very often used for support of traditional

courses at schools. Even more the percentage of regularly usage of ordinary homepages has slightly lessened (22% in 2007 to 17% in 2008). The number of regularly e-Learning platform users went up a little bit (12.1% 2007 to 13.2% 2008). Not very surprisingly the most often use of e-Learning platforms was to be found among the future students of informatics.

Research Question 5: Use of Web2.0 Opportunities

The final research question covers the usage of modern Web 2.0 applications by first year's student of TU Graz. This part of the survey was splitted into topics concerning "Social Media", "Social Bookmarking Tools", "Social Networking Tools", "Podcasts", "Virtual Reality", "Media Sharing" and "Micro-blogging". A topic consisted at least of not more than five several features to be checked separately. The student had to specify in which kind the feature is used by him/her, whether it is only known passively or used actively or even for learning efforts. Figure 3 displays an overall result of this questioning.

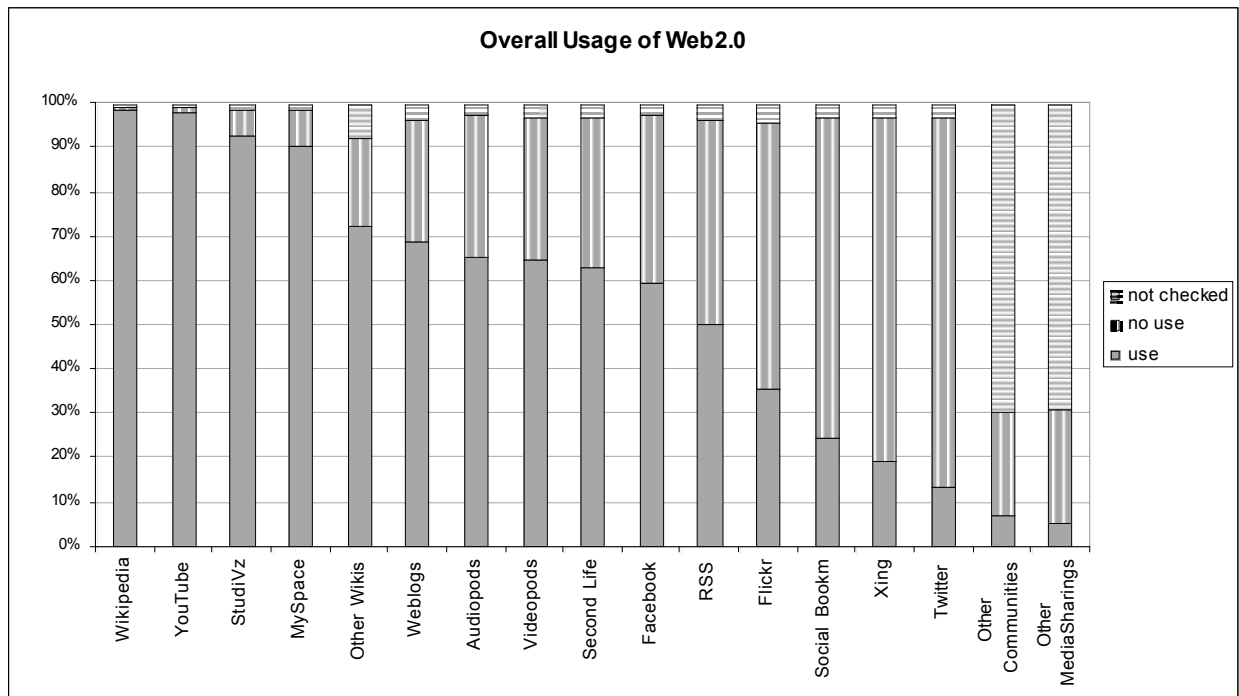


Figure 3: Overall Usage of Web2.0 of first year's student at TU Graz in 2008.

It is definitely to be stated that Wikipedia and YouTube have an influence on the everyday life of students. They not only consume content and media from those platforms but they also implement them into their learning behaviour. Wikipedia and Wikis in general are the most used features for learning efforts in this context; all other possibilities are of no meaningful importance for learning purposes yet (see also Fig. 4).

Furthermore students are used to act and communicate within social communities like StudiVZ (the German version of Facebook and similar communities), MySpace or Facebook. Although StudiVZ is of high active relevance for students there is a migration to Facebook to be recognised unlike the survey of 2007. While the usage (active and passive) of Facebook was checked with 24% in 2007 this year's counting reaches 59%. MySpace as well gained on from 78% (2007) to 90% (2008). But still social communities are mostly used for private purposes. The business relationship community Xing doubled in fact (from 10% in 2007 to 20% in 2008) but is far from brand awareness compared to private communities. Furthermore Xing only gets better known during the two surveys but is not used more either actively or passively (see Fig. 4). That means students of the first semester have no distinct interest in building up connections for their later career online, and social communities are mainly associated with private activities.

Not very common Web 2.0 features like social bookmarking or micro-blogging are quite known but still little used at all nevertheless they doubled in publicity. So those applications seem to have neither immediate relevance for the private nor study-life of students. Besides common private communities and media sharing portals like YouTube and Flickr other community-platforms are just not known or not used.

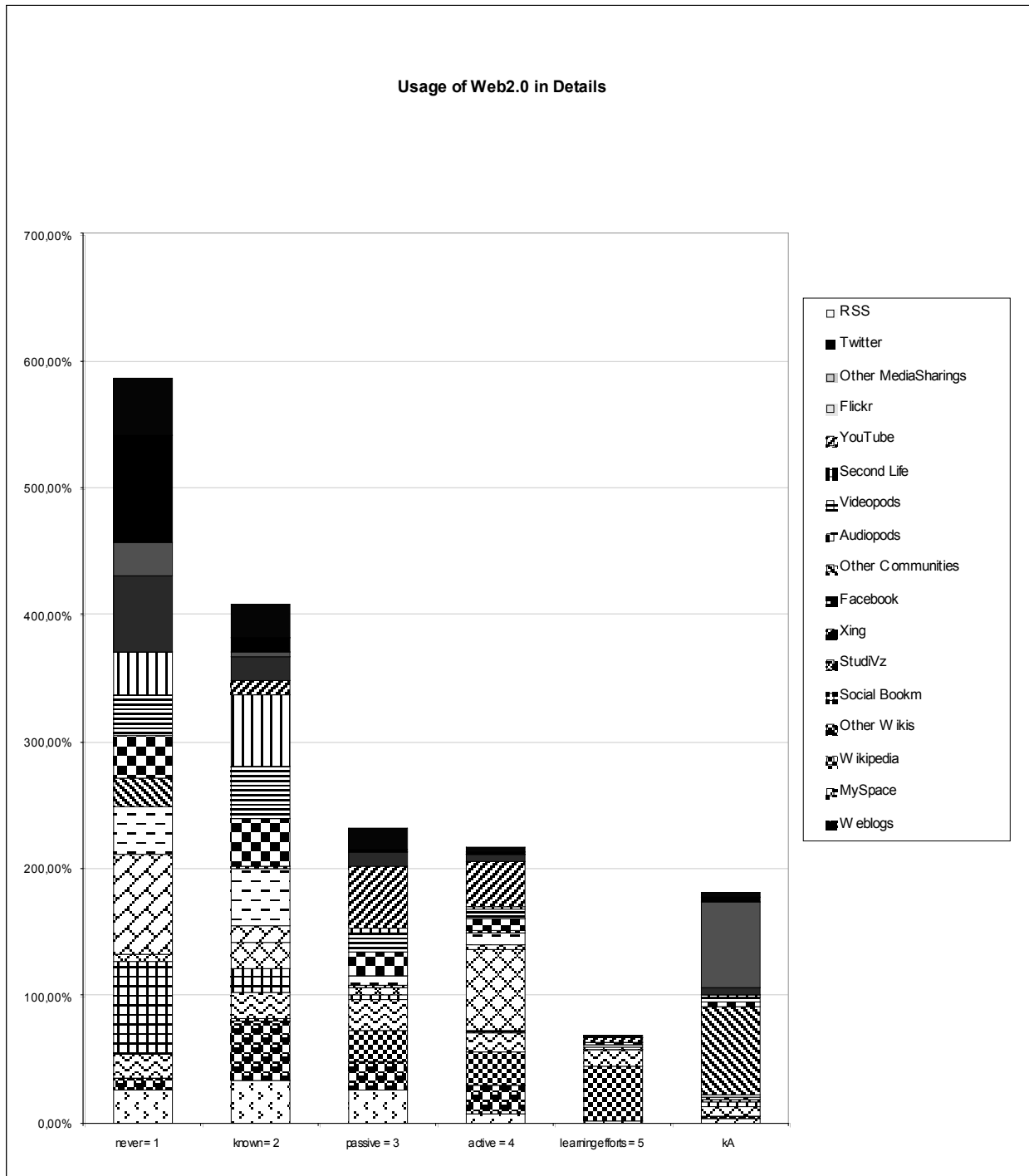


Figure 4: Usage of Web2.0 in Details of first year's student at TU Graz in 2008.

Discussion and Conclusion

By gathering a lot of data and considering the high amount of participants (n=821; more than half of all beginners in 2008) it can be pointed out that the study is from high statistical relevance. The student gave feedback about their IT infrastructure as well as their IT competencies. The followings are the most interesting results:

- The so-called “Net-Generation” has arrived towards the equipment they bring along. Over 90% of the students have at least one internet access at their study-home. More than 80% of the students have laptops and most of them have a PC as well whereas PC seems to regress for the benefit of mobile devices and laptops. The number of those students having digital devices is still rising. Mobile internet connectivity is strongly increasing for the benefit of all other internet connections. Nearly every third student has a mobile phone with Internet access. Cell phones with WLAN access are definitely increasing. Mobility is strongly winning in each part of the survey.
- The so-called “Net-Generation” has arrived if we think in terms of basic communication tools like e-Mail or Instant Messaging. Writing an E-Mail, participating in different chat rooms or contributing to a discussion forum is part of a student’s everyday life. Skype and VoIP are increasing and it can be expected that also these technologies will pervade the everyday life soon. Digital communication is still rising and VoIP gained on influence.
- The so-called “Net-Generation” has arrived yet towards the usage of common Web 2.0 features like Wikipedia, social communities or YouTube. Students are used to perform within social communities. Social communities are rising as well but are associated with private activities.
- The so-called “Net-Generation” has not arrived towards the usage of rather uncommon Web 2.0 features like social bookmarking, micro-blogging, media sharing communities.
- E-Learning is still not established in secondary schools. Usually an Austrian secondary school has access to the internet currently. It would be of no greater investment to install or get access to a learning management system. The problem may lie within the lacking competences of teachers towards a didactical meaningful implementation of e-Learning scenarios into their teaching routine.

Bearing these outcomes in mind the following statements can be concentrated:

- Universities at least should be aware of a redesign of their structural offer according to power sockets and WLAN within university areas such as lecture rooms. Especially on technical universities students bring their own laptops with them and therefore we have to rethink the current offered infrastructure. On the one side a reduction of computer work places could take place on the other side aspects of software policy must be rethought; software agreements must be treated a more student-centred.
- A lot of work must be done in the area of training for teachers. Comparable with other studies (Magayran 2008) students are using Web 2.0 technologies for private purposes but not for learning ones. One of the reasons for this effect is the missing of an appropriate usage within lecturers. Didactical models as well as technical skills for lecturers have to be focused in the future.
- For the students are generally able to profit from it e-Learning should be made more attractive by including e-Learning activities of teachers as a part of their paid teaching responsibilities. One of the most problematic aspects at universities in German speaking countries is that there is no clear quality agreement on teaching. Since the improvement of lecturing will not honoured in an appropriate way new didactical settings and technical changes are not welcome because they only open out into more workload.
- Some of the Web 2.0 achievements should be taken serious (e.g. Wikipedia, Weblogs in general, social communities) and should be integrated into modern didactics.
- According to the high number of available audio players podcasting should be strengthened.

Finally this study pointed out that a “Net-Generation” in the broader sense of Web 2.0 has not arrived at the university. Students of today have a perfect equipment and they have access to the internet not only with broadband but also mobile. Furthermore students are used to perform within social communities and social communities are rising as well but are associated with private activities. In other words universities are nowadays confronted with well-equipped students who are very familiar with the World Wide Web and who are communicating through different communication tools. More research work is needed to bring these technologies to lecturers as well as appropriate didactical settings. Is your university ready for the Ne(x)t-Generation?

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