Students, Internet, eLearning and Web 2.0

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ABSTRACT

An investigation into the students' use of internet services, media types and e-learning preferences tried to find out if students today are interested in the use of Web 2.0 methods for learning. More than 2.000 students participated in the survey conducted by the international architecture company DEGW and the author. The data of the survey are compared to the results of a parallel study by HIS GmbH that was answered by 4.400 students. The results of both studies throw a critical light on the popular discussion about the net generation or the so-called digital natives and may lend themselves to a more cautious or careful introduction of Web 2.0 methods in teaching and learning accompanied by instructional and tutorial assistance.

INTRODUCTION

The numbers are impressive: during the past 5 years since its commencement, 95% of all American students have become members of facebook, more than 150 million people use it worldwide and have uploaded over 10 billion photos. Since its initiation 3 years ago, 12 million German users have registered with StudiVz. YouTube's video Database has been in existence for a mere 3 years and already counts more than 100 million videos. Flickr contains more than 2 billion photos of its users. These numbers are truly impressive. Furthermore, primarily the younger members of our society have primarily been responsible for generating them. But can they be labelled the "net generation" based solely on these statistics?

Wolfgang Schweiger has found an explanation for the often-cited magnitude of internet use: "academics who intensively deal with online media and reiterate its massive prevalence increase its relevance and thus the legitimacy of their own research" (p. 97; italics in the original). Considering that Schweiger studied "The Myths of Internet Use" (2004), if his assertion is correct, my own research and this very article would loose their legitimacy. My analysis will not deal with enormous numbers, but rather with tiny statistics.

The Internet is full of fantasies about young people who have access to computers and internet since early childhood. Many proponents of Web 2.0 and eLearning 2.0 are presently fuelling such speculation (see Schulmeister, 2008). This theme has been indiscriminately adopted and disseminated by the OECD in its own Website for the "New Millennium Learner" (NML).[1] Francesc Pedró (2006) of OEDC-CERI asserted: "that NML seem to be a generation-wide phenomenon, growing steadily and already having a universal character in some OECD countries." He chooses the fact that more younger users than older users favour instant messaging

as a criterion for his finding that: “instant messaging is considered to be a quite good indicator of the development of NML.” The European Commission has also recently begun to study the topic by calling on the Director of its Institute for Prospective Technological Studies, Yves Punie, to edit and oversee a number of eLearning papers on the topic “New Learning Generation.”[2] Despite various critical voices (Schulmeister, 2008; Evans, 2007; CIBER, 2007; Bennet, Maton & Kervin, 2008), the myth of a new net generation has increasingly found advocates in the cultural region of Europe.

The arguments are always identical: the universal access to new media and its extensive use by children and youth must be shaping this new Net Generation. I do not question the existence of many teenagers who are active in the internet as cited by Tapscott (1997), Opaschowski (1999), Howe & Strauss (2000), Prensky (2001), Palloff & Pratt (2003), Oblinger & Oblinger 2005, and many others. It is not the appropriate place here to describe the claims of these authors here in detail. For an extensive criticism of these publications see Schulmeister (2008). The youth they describe communicate in virtual communities and volunteer for chats and interviews. However, generally speaking and from a scholarly viewpoint, those who write about such young people make certain unforgivable methodological mistakes (detailed data and argumentations are reported in Schulmeister, 2008):

- Media activities of youth are reviewed one-sidedly without regard for other aspects of their lives; empirical surveys show that youth are active in clubs, mostly sports clubs, that they spent much of their time in meeting friends outside; media use is just one of their ways to spend their leisure time;
- Seldom have both the actual content of youths’ media use and an exact profile of their motives been studied; research into the actual use of media shows that youth still watch traditional television and hear music to an enormous extent and also read print media; with regard to the Internet the majority uses the communication methods and the social software;
- The publications make incorrect generalizations about to the whole generation based on the results of accidental samplings, while overlooking the biggest differences between youths, their activities, interests and preferences; all studies of large samples in the internet using differential statistical methods (factor and cluster analysis) demonstrate that young people as well as the older population break apart in different user groups with different interests, motivations, lifestyles, social orientations etc. (see for example Treumann, Meister & Sander, 2007);
- Most net generation authors assume the behaviour of youths is determined by the existence of digital media and assumed to influence the learning habits and preferences of an entire generation in high school and college, whereas thorough surveys involving students in higher education prove that there is no transfer of Internet experience to study competences and learning preferences (e.g. Kvavik, 2005; Kvavik et al, 2004; Kvavik et al, 2005; Paechter, Fritz, Maier & Manhal et al., 2007).

In another study (Schulmeister, 2008), I extensively analysed the generational concept and proved, based on multivariable analyses of differential psychology, that collective groups always divide into subgroups of varying orientations. In that same study, referring to over 50 international large-scale empirical analyses of media use by children, youths and students, I was able to prove that media use and frequency of use are not suitable as sole variables in the interpretation of interests, attitudes, motives and preferences of youths. To the contrary, I was able to demonstrate that a closer look at all of their recreational activities is necessary, and that the types of internet and computer activities would need further and more detailed review. Having

based that deconstruction of the Net Generation on empirical studies of other scholars, it seemed logical to conduct my own survey of media use, this time based on a random sampling of students. The opportunity arose when Martin Brübach of the consulting firm DEGW asked me to cooperate in a survey of university students. The intention of DEGW was to find out if future job applicants want different working environments. My aim with that study was to analyse if and for what purpose today's students use the Internet and if a transfer to learning in the university was possible.

BACKGROUND OF THE DEGW-STUDY "RECRUITING THE NEXT GENERATION" (RNG-STUDY)

The analyses in this article are partial evaluations of the study "The de-mystification of a phenomenon – Generation Y?! 'Recruiting the Next Generation'" (rng-study), that was conducted in cooperation with the consulting firm DEGW Germany from June 10 through July 28 2008 (7 weeks).

DEGW has been one of the leading consulting firms in the fields of design and architecture for more than 30 years. Its interests include analysing and optimising the interaction between people, buildings and their environments. The study's authors, Christine Kohlert, Sina Schlickum and Martin Brübach (2008), have explained their goal in this study:

"We want to adjust the media perspective which links the classification of this young generation solely to its communications- and internet habits. One could also call it the de-mystification of a generation. Over the past six months, the DEGW-research project "Recruiting the Next Generation" was carried out in order to obtain a better-differentiated and more precise picture of this generation which is so important for the working world of tomorrow." (see http://www.recruitingthenextgeneration.de/index.php?article_id=62&clang=1)

The first part of the title of the rng-study "de-mystification of a phenomenon" was derived from my study "Does a Net Generation exist?" (Schulmeister, 2008), in which I referred to the assertion of the Medienpädagogischer Forschungsverbund Südwest: "The mystification of a 'generation @' does not stand up to the test of scholarly research." I chose this quote as a subtitle for a keynote at the DeLFI-Conference "Dispelling a Mystification" (Schulmeister, 2008b) as well as for the shortened English version of that presentation "Is There a Net Gener in the House? Dispelling a Mystification." (Schulmeister, 2008c)

The empirical internet survey was carried out over a seven-week period between June and July 2008. It was conducted solely online. A total of 2098 students from 23 cities and 20 universities, mostly from Germany, a few from Vienna, Austria, and St. Gallen, Switzerland, took part in the survey. The total survey included various items which are not relevant for this context, for example, questions about lifestyle-variables, career plans, perceptions of the working world, wishes for bosses, etc.

"STUDYING IN THE WEB 2.0" – A STUDY OF HIS AND MULTIMEDIA KONTOR HAMBURG

Multimedia Kontor Hamburg and HIS GmbH Hannover conducted a joint study "Studying in the Web 2.0. Study-related web- and E-Learning-Services" at roughly the same time (summer 2008) and with similar goals (Kleimann, Özkilic & Göcks, 2008). The sample included 4400 students in the HISBUS student panel. The survey was also based on an online questionnaire. I will compare various data from the HIS-survey with the data of the rng-study wherever similar questions were

asked of their respondents. Whereas both studies used similar questions and compiled consistent data, discrepancies in various cases provide possibilities for interesting interpretations and findings.

Questions and Question Categories in the rng-study

The following questions were asked:

- How many hours do you spend in the internet per day?
- Which of the following devices do you own?
- How often do you use the following methods of communication, the internet or online media?
- Which of the following media do you use (actively – passively)?
- Which of the following internet-services do you use?
- What interests you the most about the internet?
- How often do the following statements concerning media use apply to your studies?
- Have you had experience with LMSs and/or virtual classrooms (web-conferencing, web-meeting) during your studies? (LMS = Learning Management System)?
- Have the following methods influenced your learning habits?

We used these questions to discover how often (in which intervals) and with which purposes (goals) students actively use the internet, which services they use for academic purposes and their views on the usefulness of individual functions and services. We also wanted to determine their perception of the relevance of eLearning and Web 2.0. To reach these goals, special question types were used to prevent the emergence of artefacts that arise from carelessly-given answers. And a differentiation in content was implemented to prevent superficial deductions which are often caused by interpreting screening questions incorrectly.

- Questions differentiate between activities (e.g. communication, research, weblog, book-marking etc), media (e.g. photos, film, podcast etc.), and membership in software communities (e.g. StudiVz, facebook, Flickr, del.icio.us etc), since the use of software is not identical to the reason for its use, the use of a medium is not bound to particular software, and the participation in an environment does not require users to share the providers' motives;
- Furthermore we distinguished between active and passive use. We assumed that passive activities (reading, listening, watching) would be more prevalent than active activities (writing, discussion, producing) since productive use assumes different psychological factors, e.g. placing the need for self-determination after competence, social integration and autonomy according to Deci & Ryan (1985); extroversion, partialities, etc.;
- The usual question about the amount of use was replaced with a scale of the amount of use per day, week and month, since the mere indication of the amount provides less information than the distribution of use over time;
- Finally, nine questions were developed to ascertain the usefulness of media for educational purposes. Whereas the number of "missing values" was relatively low for all other categories of questions, a true "collapse" in responses could be measured here: fewer than 50% of the participants answered questions about the influence of media on their own studies.

Explanatory Notes about Methods used

Categories of Answers

For most questions, whenever relevant, two categories of answers were offered so that participants who had little or no knowledge of a subject matter or did not use it did not have to provide responses about its content. The purpose of the two answer categories "I am not familiar with this" and "I do not use this" was to ensure the receipt of answers about frequency of use or subjective usability of methods from only such persons who actually used those methods. We were surprised to discover that the answer category "I am not familiar with this" was extremely important for the results since, to our surprise, a great number of students were not even acquainted with most internet services let alone used them. And that is actually a great overstatement! The vast majority of all students were not familiar with most Web 2.0 applications and did not use them.

Quality of Scales

Most categories can be viewed as nominal or ordinal scales, even when the order of the categories is arranged as a numerical scale (very often, often, sometimes, seldom, very seldom). This can even be observed with the scale "daily – weekly – monthly – every few months." For this reason, the mean and standard deviation were not useable measurements. Rather, frequency and percentage are the relevant statistical measurement. I preferred using mode or modal value[3] for precise representation, sometimes supplemented by information about the second most often chosen category.

Citation Problems

The difficulty of using so-called "screening questions," which are only answered by those persons who answered the previous question in the affirmative, arose when making comparisons with the HIS-study (example: screening question: "Have you ever used a podcast?" Following question: "For what have you used a podcast?") I avoided using such questions since, as mentioned above, the additional categories "I am not familiar with this" and "I do not use this" made such questions redundant. I would like to exemplify the problems in evaluating screening questions with the following example in the HIS-study. Question 3 states: "You use social communities to exchange information about matters concerning your studies." Question 5 sought information about the applications used by those individuals who answered question 3 in the affirmative.

The table in the HIS-study concerning Question 5 is properly introduced with the comment, "only those students who answered that they use social communities to exchange information about matters concerning their studies in question 3." One can easily assume that, during meetings, lectures or discussions, statements made out of context to the effect that "56% of all students use social communities for exam preparation" will be arise. The correct assertion would actually be: "56% of all users who use social communities in order exchange information about matters concerning their studies also use them for exam preparation." The text of the HIS-study about question 5 does begin with a reference to the context of the questions. However, the second sentence, if quoted without the above-stated introduction, can already lead to misinterpretation: "66% of the students use communities very often to often in order to make contacts or maintain contacts with other students." Based on the entire random sampling, however, only 49% of all

responding students gave that answer. Further aspects come to mind with the problematic methodology of this question.

Question 5: You use social communities to exchange information about matters concerning your studies. For which study-related activities do you use them?
Screening question: Only those students who answered that they use social communities to exchange information about matters concerning their studies in question 3.

	N	%
Exchange of documents and literature	1,597	48.7
Exam preparation	1,792	54.6
Preparation of homework, papers, etc.	970	29.6
Clarification of questions for self-study	1,917	58.5
For support with practical aspects of studying (apartment search, job or internship information)	1,496	45.6
Information about studying abroad	675	20.6
To make and maintain contacts with other students (meeting other students, etc)	2,166	66.0
Other:	129	3.9
Number of Participants who answered:	3,280	100.0

Table 1: study-related activities (Kleimann, Özkelic &, Göcks, 2008)

It is helpful to see the number of people who answered the question. One can thus realise that 3280 students made a total of 10742 entries and gave on the average 3.3 responses to the 8 answer categories. Since, however, not all of the total number of 4400 students in the random sampling answered the question, the method of interpreting the percentages must be scrutinized. The 3280 students who answered comprised only 75% of the total sample. One can either put the values into the perspective of the total number of participants or put the percentages into the perspective of the basis of the total of 10742 responses, which would lead to implications about the ranking of the categories.

A second screening question in the HIS-study leads me to a further comment. The HIS-study asked students in Question 9 which applications exist at the student's own university. Furthermore, in Question 10, the questionnaire asked who uses which of these applications at the student's own university, and in Question 13, how often these applications are used. This is a multi-tiered screening question. The number of responses spirals downwards. In retrospect, even the study's authors view their procedure critically.
"In their responses, more than half of the students indicated that, concerning nearly all of the applications mentioned, they thought their universities did not offer these opportunities for learning and studying. The previous responses to questions concerning the students' assessment of usefulness are thus likely to be based on speculations rather than experiences. Furthermore, the values for use are very low." (Kleimann, Özkelic & Göcks, 2008)

Question 14: Which are the main purposes for which you use the digital applications you named at your university? Screening question: Only those students whose answer in question 13 indicated that they use digital applications at their university.

Electronic audio-recordings/audio podcasts of events	N	%
For preparing / reviewing classes with other students	87	15.9
For individual preparation / review of classes	205	37.2
To prepare for examinations	180	32.6
As part of classroom-based courses	19	3.4
As individual method of study	42	7.6
Other	19	3.4
Total	551	100.0

Table 2: Use of podcasts (Kleimann, Özkelic & Göcks, 2008)

In Question 14, only one answer could be chosen out of 6 available categories for each digital application (audio podcast, video podcast, blog, etc). This, however, is not evident in the table, but only when reviewing the questionnaire which offers 6 possible answers to questions in a pop-up menu.

4125 people answered Question 13: 2614 thought that there were no audio podcasts at their university, 922 said that they would not use audio podcasts. Thus, 589 people remained to answer Question 14, of whom 551 (552 according to my calculation) answered the question (12.5% of the surveyed individuals), i.e. a loss of 38 further participants.

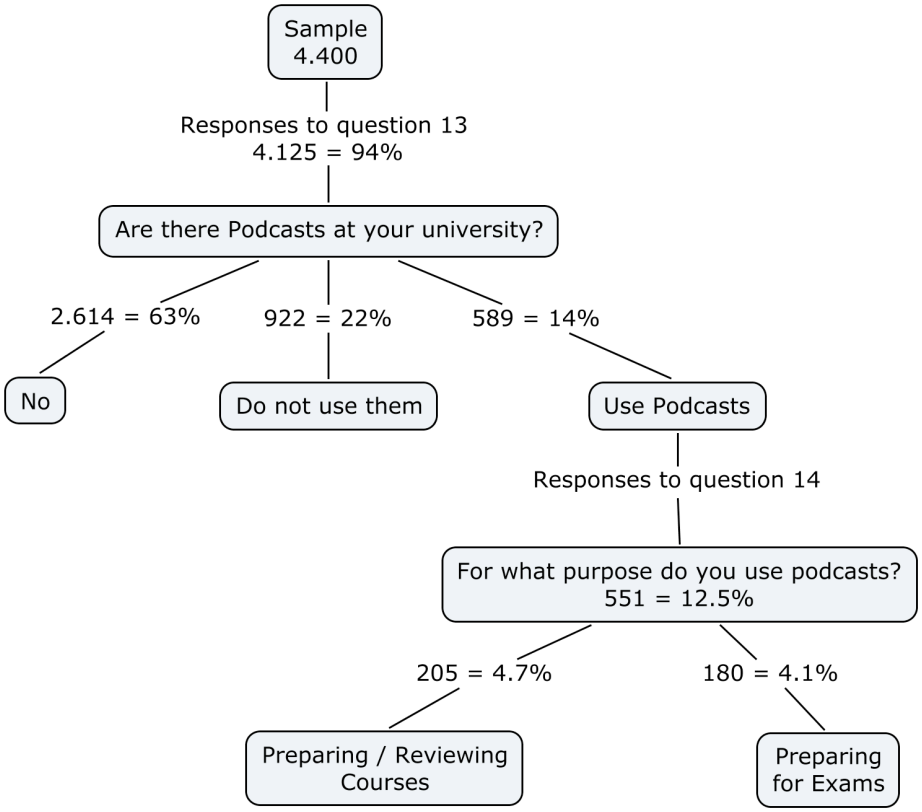

Fig. 1: Screening question 13 in Kleimann, Özkelic & Göcks, 2008

One can expect statements in the short or in the long run to the effect that: “37.2% of all students use audio podcasts to prepare for classes, over 32% to prepare for exams” (for this example, I chose the two higher percentages!). These statements would be wrong. Since HIS considers this sampling of 4400 students to be representative, the study should state: 4.7% of all students use audio podcasts to prepare for classes, and 4.1% to prepare for exams. All other applications were used even less frequently.

The treatment of Missing Values

These thoughts lead me to the next problem, namely the treatment of so-called missing values in statistics, i.e. missing answers in questionnaires. I do not refer to those cases in which a few people did not answer a few questions, so that a varying but small number of answers might be missing from a few individual questions. I refer to those cases in which a larger number of people did not respond to one or to various questions, whereby nothing is known about their motives. This is especially unexpected when a large number of “missing values” arise although the scale of answer categories included the answers, “I am not familiar with this” or “I do not use it.” In these cases, one can distinguish between three groups of users who did not add input to the question. The reasons for not answering remain unclear for the first group, whereas they are known for the last two groups.

This problem arose in the last question of the rng-study, “Have the following methods influenced your learning habits?” Students were asked about the following applications:

1 learning materials online	2 discussions in forums	3 tests online
4 contact per chat	5 group projects online	6 visualisations
7 interactive exercises	8 podcasts	9 simulations

1214 or 1216 participants in the survey (58%) consistently failed to answer these 9 questions. The reason for this reduction in participation could not be discerned. There was no other instance of a high quota of missing values in any other segment of the survey. I would like to illustrate the statistical problem using the example of online learning materials:

Learning Materials Online

		N	Percent	Valid Percent	Cumulated Percent
Valid	Was very helpful	5	.2	.6	.6
	Was helpful	27	1.3	3.1	3.6
	Was not helpful	44	2.1	5.0	8.6
	I did not use it	456	21.7	51.6	60.2
	does not exist/I do not know it	352	16.8	39.8	100.0
	Total	884	42.1	100.0	
Missing	System	1214	57.9		
Total		2098	100.0		

Table 3: Learning materials online (rng-study)

Considering the large number of missing values, one must decide whether the question should be evaluated at all, and if so, how to calculate the answers in percentages. The percentage of the total sampling are shown in the column "Percentage," while the column "Valid Percentage" contains the total percentage reduced by the missing values. I would like to illustrate this calculation with the following graph:

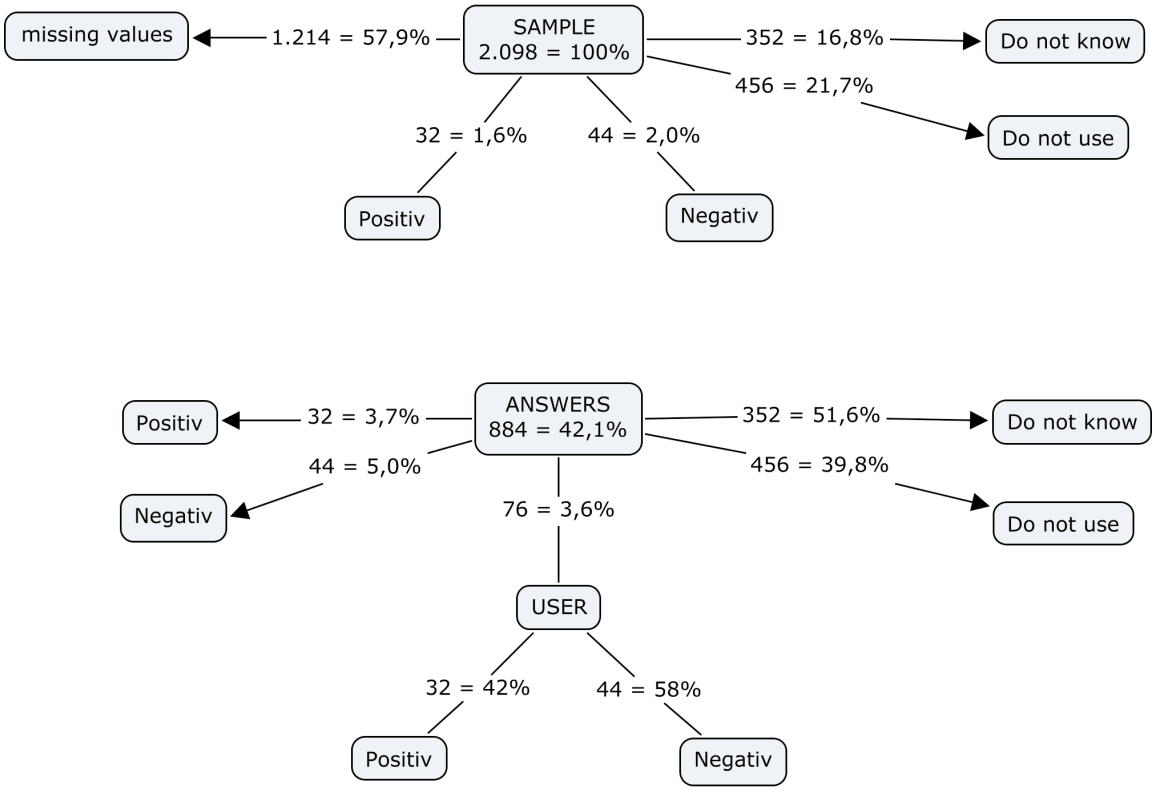

Fig. 2: missing values: usefulness of online learning material (rng-study)

The uppermost graph demonstrates the conclusion that "32 = 1.6%" of the students found online learning materials useful. That would also be the value in the column "Percentage." The lower graph allows two variations to this conclusion. One possibility would be the claim that 32 = 3.7% out of the 42.1% of the participants who answered the question whether online learning materials are useful, answered the question in the affirmative. That would represent the answer in the column "Valid Percentage." Another possible answer would be: "32 = 42% of the 76 users of online learning materials, representing only 3.6% of the total survey, found online learning materials useful. This is not a question of which alternative is right, as they are all correct. It all depends on the complete linguistic presentation of the dependencies in the situation.

The next graph clarifies these calculations with a further example of the question whether audio podcasts were useful or not, whereby the values for "was useful" vary between 30.6% to 73% and even 88%.

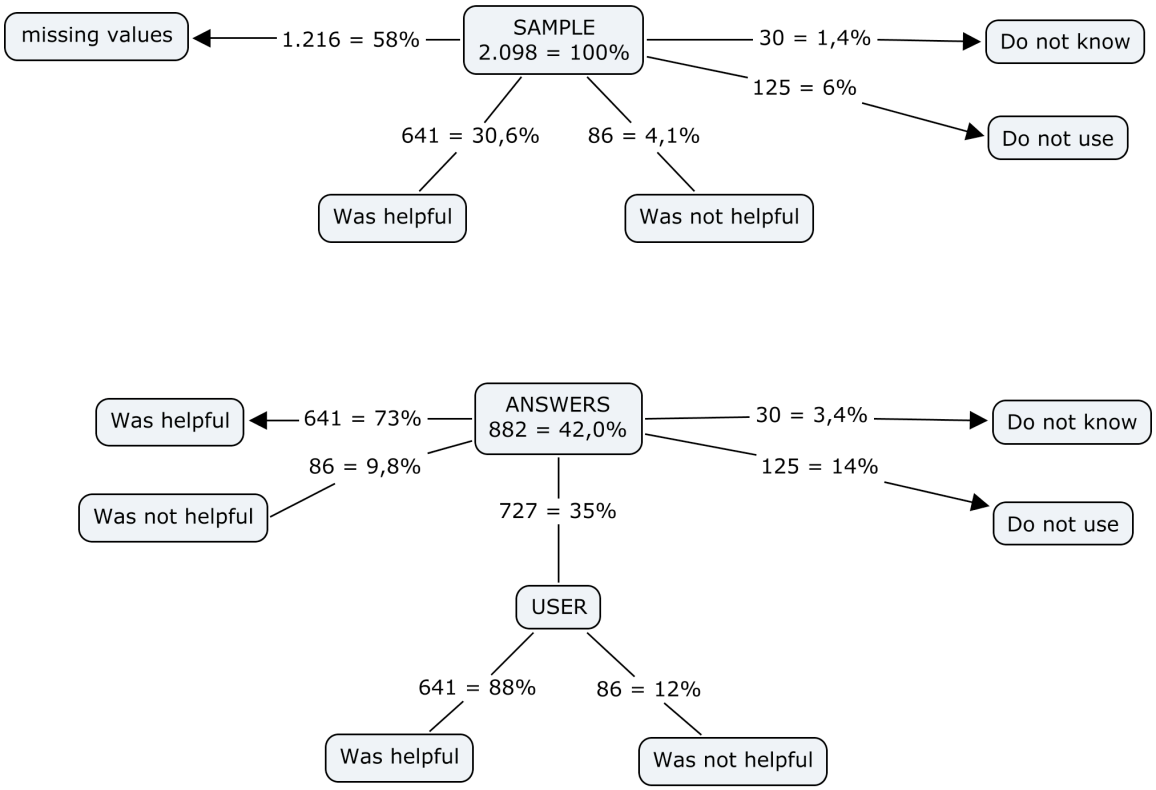

Fig. 3: missing values: Usefulness of audio-podcasts (rng-study)

The following report about the results of the rng-study attempts to come to terms with the above-mentioned methodological problems.

LIFESTYLE ANALYSIS IN THE RNG-STUDY

The rng-study ascertained lifestyle factors using a factor analysis.[4] A total of 111 variables were included in the study's factor analysis. These variables were made up of 6 groups, which were not all related to the internet: the choice of TV-stations (14 items), reading preferences (19 items), music preferences (17 items), hobbies (20 items), ownership of communication devices (9 items), and lastly, use of communication, internet and online media (32 items). I mention this because the relevant computer- and internet-based variables in this segment of the study emerge nearly entirely in one factor in the factor analysis. This means that in a survey which reviews variables other than lifestyle, culture and daily routine, there should be a clear contrast in the participants' perception of computer and internet-based variables.

The following four factors were extracted that clearly show the diversity among the sample (for more details see the report by Kohlert, Schlickum & Brübach (2008) that may be purchased at http://www.recruitingthenextgeneration.de/index.php?article_id=62&clang=1):

Factors	N	Characteristics	Under Age 28

Virtual/technical orientation	306	Predominantly male, high proportion of design, engineering, math and natural sciences; this factor does not constitute the highest proportion of any field of study.	14.7%
High cultural orientation	667	Predominantly female, high proportion of humanities, language, art and cultural studies, as well as education.	29.2%
Reality orientation	557	Predominantly male, high proportion of economics, law, engineering, natural science and mathematics.	27.5%
Sociable orientation	567	Predominantly female, higher proportion of economics and social sciences (not the highest proportion in any field of study.)	26.6%

Table 3: Lifestyle factors (rng-study)

The first factor combines nearly all the variables which I included in the survey about internet use. The second factor comprises the variables which are related to cultural activities like museums, theatre, concerts, conventions, but also cooking, baking, reading cultural magazines, listening to music or playing music oneself. The third, which I would have called "acting in everyday life" included variables like functional activities in internet like online-tickets, -banking, -shopping, search engines, subject-related databases, but also reading economics-oriented magazines and conservative newspapers, and also a lot of communication (emails, text messaging). I would call the fourth factor the "lifestyle and entertainment factor," since it includes variables like TV (soap operas, music videos, comedies, movies), shopping, reading fashion magazines, visiting bars and discos, eating out, etc.

This diversity in the sample is especially notable since it prevents a one-sided focus on the computer and internet by using variables other than internet-variables. Furthermore, the role and meaning of internet-media vary according to the orientation. When differentiating between younger and older participants in the survey (under 28 and over 28), it even became clear that the younger participants were in the minority in the virtual-technical orientation category:
"The principal conclusion can be observed that there is no stereotype in the group of under-28-year-olds, that bizarre generation labelled "Generation Y" by the media. Rather, there are various different parallel types which are stronger or weaker depending on sex, age and field of study."(rng-study, 47).

HOW DO STUDENTS USE THE INTERNET?

How many hours per day do students spend in the internet?

How many hours a day in the internet?

		N	Percent	Valid Percent	Cumulated Percent
Valid	never	2	,1	,1	,1
	less then 1 hour	230	11,0	11,0	11,1
	1-2 hours	1155	55,1	55,1	66,1
	4-6 hours	469	22,4	22,4	88,5
	7-10 hours	179	8,5	8,5	97,0

How many hours a day in the internet?

		N	Percent	Valid Percent	Cumulated Percent
Valid	never	2	,1	,1	,1
	less then 1 hour	230	11,0	11,0	11,1
	1-2 hours	1155	55,1	55,1	66,1
	24 hours	62	3,0	3,0	100,0
	Total	2097	100,0	100,0	
missing		1	,0		
Total		2098	100,0		

Table 4: Hours in the Internet (rng-study)

Means cannot be calculated because of unequally large intervals between the categories in the scale. Applying the ceilings (i.e. 1-2 equals 2, 4-6 equals 6 etc) would also be problematic in the written presentation of the results. 66.1% of the students surveyed spend less than 1-2 hours in the internet. Only a third is in the internet for longer than two hours. The data concerning length of time are not unambiguous since they do not necessarily mean that the users actively utilize the net for that period of time. That is especially clear with those users who maintain that they are in the net around the clock, since they probably mean that they leave their computers on 24 hours a day. The same is probably true for such students who leave their computers online 7-10 hours a day.

The data of the rng-study and the HIS-study do not vary greatly:

less than one hour	11	0.3%
1 to 3 hours	3,190	72.6%
4 to 6 hours	988	22.5%
7 to 9 hours	139	3.2%
10 to 12 hours	56	1.3%
24 hours	10	0.2%
Total	4,395	100.0%

Table 5: Hours in the Internet (HIS-study)

Which devices do students own?

Of all respondents, 92% own a cell phone, more than those owning a laptop, which, with 87.9% has far surpassed desktop computers, which only 50% of the participants own. MP3-players are represented with over 70%, other mobile devices such as PDAs or cell phones with PDA reach only 5.3% or 9.8%. The only interesting observation in this regard is that PDA-ownership increases with age (which could indicate it increases with income).

Device Ownership	N	Percentage	Percentage of cases
PC	1046	15.2%	50.0%
Laptop	1838	26.8%	87.9%
MP3Player	1472	21.4%	70.4%
iPod	197	2.9%	9.4%
Cell phone	1924	28.0%	92.0%
PDA	111	1.6%	5.3%
Combined Handy/ PDA	204	3.0%	9.8%
Wii	78	1.1%	3.7%
Total	6870	100.0%	328.4%

Table 6: Device Ownership (rng-study)

Which functions and services do students use in the internet?

Students have access to a wide range of functions, media and services in the internet. I tried to separate these diverse activities into three categories of questions:

- In Question 3C, students were asked which internet activities they use daily, weekly, monthly, or every few months. Examples were Email, SMS, chat, search engine and research.
- In Question 3D, students were asked how often they use different types of media, e.g. films, photos, music, etc.
- In Question 3E, they were asked which software-community platforms such as YouTube, Flickr, del.icio.us, etc. they use daily, weekly, monthly, or every few months.

Question 3C: How often do you use the following types of communication, the internet, or online media?

The scale contained the following values: Never — every few months — monthly — weekly — daily — I am not familiar with the method.

32 sub questions were posed. The survey asked about: emails, chatting/instant messaging/ sms/mms, internet-telephoning, telephone calls (land line or cell phone), real life meetings, social networks, virtual worlds, reading online-encyclopaedias, writing wikis, search engines, online-maps, researching in specialized databanks, researching in the online-catalogue of the university library, reading online magazines and professional journals, using the online-research assistant, searching for products/services, taking part in discussion forums, social bookmarking, web conferences, virtual classrooms, learning management platforms (LMS), podcast-lectures, file sharing community, use of data-exchange platforms, e-portfolios, online auctions, online shopping/reservations, administering own websites, using event platforms, reading e-books.

The intervals between the values “never — every few months — monthly — weekly — daily” are not equal. I therefore undertook an analysis based on frequency and modal value (see note 3):

daily	%	**weekly**	%	**monthly**	%	**Every few months**	%
E-mail	93.8%	Online-encyclopaedias	54.2%	Online-Shopping	42.2%	Online-Auctions	35.4%

Telephoning	79.4%	Online-banking	48.8%				
Search engines	75.8%	Online-city maps	46.8%				
Real-life meetings	65.6%	Product searches	38.8%				
SMS / MMS	61.5%	Specialized databases	33.6%				
Social networks	38.9%	Online-catalogues	33.5%				
Chat / IM	36.4%	Online-magazines	28.7%				

never	%	**I am not familiar with the method**	%	**Never plus I'm not familiar with the method**	%
Virtual worlds	78.3%	Social Bookmarking	45.7%	Virtual worlds	93.2%
own Website	73.0%	Research assistant	43.6%	ePortfolio	92.2%
Web conferences	70.6%			Social Bookmarking	89.4%
Virtual classroom	70.6%			Virtual classroom	86.4%
Writing wikis	65.9%			Podcast-lecture	83.2%
Podcast lectures	64.8%			Data-exchange platforms	82.7%
Reading E-Books	59.3%			Web-conferencing	81.7%
e-Portfolio	52.9%			Event platforms	79.7%
Data exchange platforms	53.1%			Writing wikis	79.0%
Event platforms	51.8%			File Sharing Community	77.2%
File Sharing Comm.	51.5%			Own website	76.2%
LMS	50.1%			Research assistant	73.5%
Discussion forums	49.5%			Reading E-Books	64.9%
Internet telephoning	31.9%			LMS	63.5%
				Taking part in discussion forums	50.9%
				Internet-telephoning	34.0%

Table 7: Usage of Internet Services (rng-study)

In general, for activities with a daily modus, the second most common value is weekly, and for activities with a weekly modus, the second most common value is monthly. That shows that the result does not become more positive by drawing on the second most common value.

Of the 32 functions which were sampled, 16, i.e. exactly half, had extremely high percentage of values in their modes of either "never used" or "I'm not familiar with the method." The values were so high that no appreciable values remained for other scale values. I added these two values together in the last column of the above table. It is surprising that LMSs[5], which, in the meantime are prevalent at many universities, and podcast-lectures, for which there has been so much publicity lately, belong to this category. Other functions which are quite easy to use such as social bookmarking[6] and ePortfolio are also found there. The fact that some of the interactive environments which require active participation (discussion forums, own websites, writing wikis[7]) are also found is this category is less unexpected.

The distribution clarifies that users clearly distinguish between daily, weekly and monthly use of applications, whereby their use of computers and the internet is markedly utilitarian in its

approach: daily use for communication, weekly use for research, and monthly use for costly activities. A pragmatic and thoroughly plausible picture of the distribution of activities can be deduced from the time scale.

In the rng-study, the 32 items were subject to a factor analysis which led to the extraction of 5 factors: Web 2.0 services – Search for information – online services – communication in the web – communication outside the web. I mention this because the analysis of these factors according to the aforementioned lifestyles reveals marked differences between the lifestyles:
"The first factor, characterised by Web 2.0 services, is a unique characteristic of the virtual/ technical-oriented participants, who furthermore use the web for communication to a great extent. The cultural-oriented participants mainly use the web to search for information, whereas the sociably-oriented participants mainly communicate outside the internet."(rng-Study)

The factor analysis also clearly underscores differences between age groups:
"Regarding generations or age groups, it is apparent that communication – whether via internet or not – decreases with age, certainly to a great extent because of professional or private constraints. However, the use of Web 2.0 services and internet-based information searches increases markedly with age, a phenomenon which would have rather been anticipated with the younger age group. On reviewing the individual items, there is, roughly speaking, little difference between age-groups in the use of Web2.0 services."

Question 3D. Which of the following digital types of Media do you use?

Based on a scale (never, seldom, sometimes, often, I'm not familiar with it), different types of media were inquired about twice in this question, once under the headline "active = self-produced, writing, uploading" and secondly under the headline "passive = viewing, reading, downloading." Ten media types were included: Audio podcasts, music, internet-radio, films, videos, video podcasts, internet-TV, weblogs, interactive games, photos.

Media use	Passive					Active			
	often	sometimes	seldom	never	Not familiar	often	sometimes	seldom	never
Audio podcasts	5.7%	13.3%	20.2%	**44.2%**	14.8%	0.4%	1.1%	2.7%	**95.7%**
Music	**45.7%**	26.9%	14.3%	9.7%	0.5%	6.0%	5.5%	7.2%	**81.3%**
Internet-radio	17.3%	**29.7%**	24.6%	24.4%	1.4%	1.3%	2.0%	2.2%	**94.5%**
Films	21.2%	**28.7%**	21.3%	25.6%	0.9%	1.5%	2.6%	4.3%	**91.6%**
Videos	18.6%	**32.1%**	23.8%	21.7%	1.1%	1.7%	3.4%	7.9%	**87.0%**
Video podcasts	3.7%	11.9%	20.3%	**50.8%**	11.0%	0.4%	1.2%	2.4%	**96.0%**
Internet-TV	6.5%	17.5%	22.1%	**48.9%**	2.8%	0.8%	1.4%	1.8%	**96.0%**
Weblogs	6.1%	13.2%	23.5%	**45.6%**	8.9%	2.7%	5.7%	8.0%	**83.7%**
Interact. Games	3.6%	8.6%	16.9%	**63.4%**	5.2%	1.0%	1.5%	3.8%	**93.7%**
Photos	28.6%	**36.9%**	20.7%	8.8%	0.7%	16,7%	**31,0%**	22.7%	29.6%

Table 8: Media Use (rng-study)

The problem of missing answers, which was discussed in the introduction, arose with this question. The question regarding passive use had only few missing answers: here, the difference between total percentage and valid percentage was minimal. However, only 77% and 83.6%

answered the question about active media use. One may, of course, assume that those who did not answer at all would have answered “never” or “not familiar”, but we cannot be entirely sure.

Only music is used “often” passively, whereas internet-radio, films, videos and photos, which are used the next most frequently, are used “sometimes.” Preferences are obvious: entertainment media are vastly preferred over participation media. Most media types are not even used passively: the most common value, the mode (see note 3 above), for more than a half of the media-types is “never.”

Even though user numbers for audio podcasts[8] and video podcasts[9] are still very small, the trend, also found in the HIS-Study, clearly indicates that users prefer video podcasts. I would like to hypothesise that listeners do not bond with mere audio presentations of lectures to the same extent as video viewers. This might be a question of concentration, since only the sense of hearing is used in the audio version, whereas the sense of vision remains unused and therefore seeks other activities. Podcast protagonists should further explore this point if they want to develop products for future markets.

Only photos are actively used to a noticeable extent. All other media have the mode (see note 3 above) “never”, which lies between 81.6% and 96.0%. This is not unexpected for a number of media, since active or productive activities with, for example, films, TV or programming games would be difficult to achieve. However, the result is surprising for other media types: I would have expected higher involvement in music productions. And many readers would have surely wished for greater activities in writing weblogs[10].

Question 3E. Which of the following internet services do you use?

Here the scale also varied between the values: “never, seldom, sometimes, often, I’m not familiar with it.” The following 21 internet services, most of them Web 2.0 services which are currently popular, were included: StudiVz, facebook, Del.icio.us, LibraryThing, XING, LinkedIn, Lokalisten, MySpace, Amazon, eBay, ZOHO, Zotero, Wikipedia, Special Wikis, SecondLife, Flickr, Picasa, Ringo, Twitter, YouTube, Video.de.

Often	**%**	**Sometimes**	**%**	**Never**	**%**	**Not familiar**	**%**
Wikipedia	58.5%	Amazon	40.3%	Second Life	76.7%	Zoho	66.0%
StudiVZ	44.4%	YouTube	38.1%	MySpace	64.0%	Zotero	64.0%
		eBay	35.3%	Lokalisten	61.6%	Library Thing	63.1%
				Facebook	49.7%	Ringo	61.2%
				Video.de	48.2%	Twitter	62.6%
				Spec. Wikis	33.8%	Del.icio.us	58.8%
				XING	32.2%	LinkedIn	55.0%
						Picasa	45.0%
						Flickr	43.9%

Table 9: Use of Web 2.0 applications (rng-study)

Only Wikipedia[11] and StudiVz have a mode (see note 3 above) of “often.” That is not surprising. Whereas StudiVZ is prevalent and often used, the same is not true of facebook, which is especially strong in the USA. Social communities generally have ties to countries, cultures,

professions, or status, preventing more general use. Thus, facebook is used by 95% of American students, but not by German students, and XING is preferred by people looking for professional contacts.

The resources and services for everyday life and shopping (Amazon, Ebay) and the reference site Wikipedia are used “often” and “sometimes.” Search engines were not part of the inquiry. The second-most common response for the three services in the category “sometimes” was “seldom” and not “often.” All other services had the mode (see note 3 above) “not familiar” and “never.” For 13 of the 21 services in the category “not familiar” and “never used,” the second most common mode (see note 3 above) was the other of the two categories. If I combine these two categories, 15 communities and software services have shares between 96.6% and 58.7%, and 8 have values above 90%:

“not familiar“ and „never“ together	**Percentage**
Zoho	96.6%
Second Life	96.2%
Twitter	96.0%
Library Thing	95.4%
Ringo	95.0%
Del.icio.us	94.5%
Zotero	93.6%
LinkedIn	91.0%
Lokalisten	86.3%
Video.de	82.1%
Flickr	81.0%
Picasa	80.3%
MySpace	72.6%
Facebook	67.1%
XING	58.7%

Table 10: Not known or used Web 2.0 applications (rng-study)

This list takes account of most of the Web 2.0 applications discussed in this study, including functions which have achieved excellent networking functions such as del.icio.us (by linking bookmarks) or LibraryThing (by linking book lists). It is surprising that our students are not aware of or do not take advantage of most of these Web 2.0 applications.

A factor analysis was also applied here. Four factors were extracted: Web 2.0 services, network/pictures, information/products, videos/friends. Age-related effects were also noted:
“It is striking here that men, who use the internet more often per se, also use the various internet services more frequently. A small tendency was noted with women using entertainment platforms such as MySpace and Video.de, but also with Amazon (not significant), stronger with StudiVZ ($p<.001$) and Lokalisten ($p=.024$), which was reflected in the fourth factor. The interest in this area decreases with the age of the participants, whereas the use of Web 2.0 services increases.” (rng-study)

Question 3F. What interests you most about the internet? Choose the three items which are most important to you from the list below.

This question requested respondents to tick off up to three categories out of a list of ten categories (the items can be seen in the table below).

Interest in the Internet			
	N	Percent	Percent of Cases
Publishing my own work	106	1.7%	5.1%
Exchanging ideas for scholarly topics	507	8.1%	24.2%
Having access to thousands of photos and films	764	12.1%	36.4%
Sharing my pictures/photos with others	196	3.1%	9.3%
Keeping track of scholarly topics	735	11.7%	35.1%
Contributing to discussion forums	181	2.9%	8.6%
Meeting people with similar interests	396	6.3%	18.9%
Expressing my ideas to other people	213	3.4%	10.2%
Finding sources comfortably and quickly	1967	31.3%	93.8%
Shopping comfortably and cost-effectively	1226	19.5%	58.5%
Total	6291	100.0%	300.0%

Table 11: Interests in Using the Internet

Our students' two most important activities or purposes in the internet are:

- Finding sources comfortably and quickly and
- Shopping comfortably and cost-effectively

The two next most important applications, which were considerably less popular, are:

- Having access to thousands of photos and films and
- Keeping track of scholarly topics

All other purposes were considerably less accepted and had a share of under 10%. I find that the obvious interpretation of these results is that functions of daily usefulness prevail. Goals which are related to academic studies turned out to be much less popular. Typical Web 2.0 activities were relegated to the bottom of the range:

- Sharing my pictures/photos with others
- Contributing to discussion forums
- Expressing my ideas to other people
- Publishing my own work

Findings concerning Media use

We are not only interested in how students use the internet for private purposes, but also in their opinion about internet use in education, and if media use has influenced their studies.

Question 3F: To what extent do you agree with the following statements concerning media use in your studies?

The following questions were asked:

- I would like more seminars to use LMSs more intensively.
- I prefer courses which do not use learning technology
- I think that a moderate use of information technology is desirable.
- I wish there were seminars which were exclusively virtual.
- I do well with the present internet use and do not need any special software surroundings.
- I very much enjoy using the opportunities of communication with other students via email and chatting.

In order to have a basis of comparison, I used questions from the EDUCAUSE-Survey of Kvavik et al (2004) and Kvavik et al (2005), which determined through repeated studies that students prefer a moderate amount of media use in their studies and teaching (Kvavik, 2005). The scale chosen for this purpose can be regarded as an interval scale running between "not at all true"(1) through "completely agree"(5).

Attitude towards Media Use in University Teaching

	Sex	N	Mean	SD	Standard error
Seminars using LMSs	male	883	3.04	1.255	.042
	female	1189	2.98	1.154	.033
Seminars which do not use information technology	male	884	2.34	1.143	.038
	female	1189	2.43	1.045	.030
Moderate use of information technology	male	881	3.82	1.009	.034
	female	1188	3.86	.862	.025
Virtual seminars	male	882	1.89	1.041	.035
	female	1184	1.80	980	.028
Sufficient internet use	male	881	3.04	1.125	.038
	female	1183	3.21	1.050	.031
Communication via Email und Chat	male	877	3.77	1.107	.037
	female	1183	3.86	1.069	.031

Table 12: Attitude towards Media Use in Teaching (rng-study)

The result is obvious: the highest student approval exists for moderate media use. The approval of seminars which use a LMS is about 40%; however, 35% of the students answered in the negative and 25% were undecided, so that the standard deviation is highest here. The disapproval is equally clear for virtual seminars with 78%, with 14% undecided and 8 % approving. Emailing and chatting received a high approval rating with 70% (17% undecided and 13% against).

A control question which could only be answered with "yes" or "no" was included:

3H. Do you have any experience with the use of LMSs and /or virtual classrooms (web-conferencing, web-meetings) in your courses?

LMSs and virtual classrooms are items which arose in the previous questions. This question was intended to determine if a similar frequency distribution could be determined.

Experience with LMSs

		Frequency	Percent	Valid percentage	Cumulative percentage
Valid	yes	889	42.4	42.4	42.4
	no	1207	57,5	57.6	100.0
	total	2096	99,9	100.0	
Missing	System	2	.1		
Total		2098	100.0		

Table 13: Experience with Learning Management Systems (rng-study)

The question did not only address LMSs but rather the spectrum of possibilities was broadened to include a larger number of users. One can debate whether the result is encouraging or disappointing: Nearly 60% did not previously know any of the systems. However 42.4% did already have experience with LMS etc.

Question 3I: Have the following methods influenced your learning habits?

Online learning materials	Discussions in forums	Tests online
Contact per Chat	Online Group projects	Visualisations
Interactive exercises	Podcasts	Simulations

The scale basically only had three values. The values ranged between “Did not help me” to “Helped me very much.” Respondents who had no input to these questions were to be identified through the responses “Not familiar to me” or “Never used.”

This question generated a large number of missing values, namely constantly either 1214 or 1216 people = 58%. We were not able to assess a reason for this. The question was not dependent on answering a previous screening question. Fewer than half of the participants answered the question. They did not use the option of ticking off “Not familiar to me” or “Never used,” but evaded the question. Since the mode (see note 3) was nevertheless “never used” and furthermore many others responded “not familiar to me,” only between 10% and 22% remain

Statistics

	Learning materials online	Discussions in forums	Tests online	Contacts per Chat	Online Group projects	Visualisations	Interactive Excercises	Podcasts	Simulations
N Valid	884	884	882	882	882	882	881	882	882
missing	1214	1214	1216	1216	1216	1216	1217	1216	1216

who found the method helpful.

Table 14: Missing Values in Question 3I (rng-study)

Considering this information, the question can unfortunately only be answered with the reservation that the question about the influence on one's own learning habits was not understood (or accepted). All of the following percentages must consider that only 42% of the respondents answered the question. Furthermore, of those who did answer, with 91% to 18% that they were not familiar with the method or did not use it or with 3.6% to 72.7% that the method helped them (Note: 50% of the 42% who answered this question amount to only 21% of the random sampling!) Since these percentages are quite problematic, the table below only states the frequencies.

	Helped me very much	Helped me	Did not help me	I did not use this method	Not available/ I am not familiar with it
Learning Materials	5	27	44	456	352
Discussions in Forums	15	242	191	359	77
Tests online	82	279	117	316	88
Contact per Chat	34	366	127	265	90
Online group projects	69	436	146	182	49
Visualisations	79	241	68	362	132
Interactive exercises	73	298	101	310	99
Podcasts	163	478	86	125	30
Simulations	124	415	65	222	56

Table 15: How helpful was ...? (rng-study)

I was astonished by the finding that so few students have used or are familiar with online learning materials to date. We have always assumed that at least this relatively low-threshold measure had already caught on, even if the somewhat more complex eLearning methods had not yet gained acceptance. And the majority of those few students who have had exposure to this method answered that the learning materials did not help them. In the HIS-study, a completely different impression arose from this question: "Whereas in 2004, 84% of all students responded that digital internet-supported learning materials have accompanied the courses in their respective fields of study, 86% attest to that statement today." (translation, R.S.)

Conclusion

The study presents a rather disappointing overview – it reflects negatively on of our efforts to introduce eLearning. We have not yet accomplished what we set out to do. The results are also sobering for anyone – deceived by the steep rise of user numbers in Web 2.0 Communities – who assumed that a new era of university education was dawning with the rise of interactive environments. Based on the myth of the "net generation" which I have dismantled in another study, a vast army of internet-enthusiasts was expected to descend upon the universities, but it has not yet appeared. On the contrary, regarding the students' careful use of Internet services and their distribution over time (see table 9) one might assume that students today have a very realistic

time management and a rather pragmatic way of using services when they need them, while others suffer from information overload.

Rational faculty members who would like to employ eLearning methods in their instruction may, however, find some realistic toeholds. It has become apparent that those applications which are especially helpful in communication and information searches enjoy high positive user numbers and frequencies (Schulmeister, 2008). It has become apparent that we are still encountering gender difficulties and digital divides with the new media. It has also become apparent that interest in and use of media change with age and that the older generation plays a special role for the younger generation (Herring, 2008). And it has also become apparent that education is not the primary purpose of media use and that there is no transfer from extensive computer experience to learning (see the three EDUCAUSE studies by Kvavik and others). These are the deficits which must be the starting points for further work.

REFERENCES

- Bennett, S., Maton, K. & Kervin, L. (2008). The 'digital natives' debate: A critical review of the evidence. British Journal of Educational Technology 39/5, 775-786; doi:10.1111/j.1467-8535.2007.00793.x
- CIBER (2007). Centre for Information Behaviour and the Evaluation of Research, University College London, School of Library, Archive and Information Studies: Information Behaviour of the Researcher of the Future. A British Library / JISC Study. An evaluation of BL Learning: a website for younger scholars. London 2007 [http://www.ucl.ac.uk/slais/research/ciber/].
- Deci, E.L. & Ryan, R.M. (1985). Intrinsic motivation and self-determination in human behavior. New York: Plenum.
- Evans, J. (2007). Tomorrow's Students: Are We Ready for the New 21st-Century Learners? Video Podcast. Educause Conference 2007 (report about project Net Day Speak Up 2007) [http://hosted.mediasite.com/hosted4/Viewer/Viewers/Viewer320TL.aspx?mode=Default&peid=ce8f0201-7d54-4abb-b1b0-4f8a0479f481&pid=06155cca-0a78-4cd5-880f-d4c5ce23ba9c&playerType=WM64Lite].
- Herring, S.C. (2008). Questioning the Generational Divide: Technological Exoticism and Adult Constructions of Online Youth Identity. In D. Buckingham (Ed.), Youth, Identity, and Digital Media (pp. 71-92). The John D. and Catherine T. MacArthur Foundation Series on Digital Media and Learning. MIT Press, Cambridge, MA & London, UK.
- Howe, N. & Strauss, W. (2000). Millenials Rising. Vintage Books.
- Kleimann, B., Özkilic, M. & Göcks, M. (2008). Studieren im Web 2.0. Studienbezogene Web- und E-Learning-Dienste. HISBUS-Kurzinformation Nr. 21, HIS: Projektbericht, Hannover.

- Kohlert, C., Schlickum, S. & Brübach, M. (2008). Die Entmystifizierung eines Phänomens — Die Generation Y ?! ‚Recruiting the Next Generation' (rng-Studie), DEGW Deutschland [http://www.recruitingthenextgeneration.de/index.php?article_id=62&clang=1].
- Kvavik, R. (2005): Convenience, Communications, and Control: How Students Use Technology. In D.G. Oblin-ger & J.L. Oblinger (Eds), Educating the Net Generation. Educause, Chapter 7.
- Kvavik, R.B., Caruso, J.B. & Morgan, G. (2004). ECAR Study of Students and Information Technology 2004: Convenience, Connection, and Control. Vol 5 [http://www.educause.edu/ecar].
- Kvavik, R.B. & Caruso, J.B. (2005). ECAR Study of Students and Information Technology 2005: Convenience, Connection, and Control. Vol 6 [http://www.educause.edu/ecar].
- Oblinger, D.G. & Oblinger, J.L. (2005). Is It Age or IT: First Steps Toward Understanding the Net Generation. In D.G. Oblinger & J.L. Oblinger (Eds), Educating the Net Generation. Educause. [http://www.educause.edu/educatingthenetgen/].
- Oehmichen, E. & Ridder, C.-M. (2003). Die MedienNutzerTypologie. Ein neuer Ansatz der Publikumsanalyse. Media Perspektiven 17. Baden-Baden: Nomos.
- Oehmichen, E. & Schröter, C. (2007). Zur typologischen Struktur medienübergreifender Nutzungsmuster. media perspektiven 8 (pp. 406-421).
- Opaschowski, H.W. (1999). Generation @. Die Medienrevolution entläßt ihre Kinder: Leben im Informationszeitalter. British American Tobacco: Hamburg.
- Paechter, M., Fritz, B., Maier, B. & Manhal, S. (2007). eSTUDY - eLearning im Studium: Wie beurteilen und nutzen Studierende eLearning? Karl-Franzens-Universität Graz, Institut f. Psychologie, [http://www.e-science.at/dokumente/eSTUDY_Endbericht.pdf].
- Palloff, R.M. & Pratt, K. (2003). Virtual Student. A Profile an Guide to Working with Online Learners. Jossey-Bass. San Francisco.
- Pedró, F. (2006). The New Millennium Learners: Challenging our Views on ICT and Learning. OECD-CERI [http://www.oecd.org/dataoecd/1/1/38358359.pdf].
- Prensky, M. (2001). Digital Natives, Digital Immigrants. On the Horizon (NCB University Press, Vol. 9 No. 5). [http://www.marcprensky.com/writing/Prensky%20-%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part1.pdf]
- Prensky, M. (2001b). Digital Natives, Digital Immigrants, Part II: Do They Really Think Differently? On the Horizon (NCB University Press, Vol. 9 No. 6). [http://www.marcprensky.com/writing/Prensky%20-%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part2.pdf].
- Schulmeister, R. (2008). Gibt es eine Net Generation? Hamburg 2008 [http://www.zhw.uni-hamburg.de/uploads/schulmeister-net-generation_v2.pdf].
- Schulmeister, Rolf (2008b). Gibt es eine Net Generation? Widerlegung einer Mystifizierung. Invited Keynote. In S. Seehusen, U. Lucke & S. Fischer (Eds.), DeLFI 2008: Die 6. E-

Learning Fachtagung Informatik der Gesellschaft für Informatik e.V. 7.-10. September 2008, Lübeck (GI-Edition Lecture Notes in Informatics) GI: Bonn (pp. 15-28).

- Schulmeister, R. (2008c). (english version) Is There a Net Gener in the House? Dispelling a Mystification. Online journal eLeed [http://eleed.campussource.de/].
- Schweiger, W. (2004). Mythen der Internet-Nutzung — Ursachen und Folgen. In U. Hasebrink, L. Mikos & E. Prommer (Eds.), Mediennutzung in konvergierenden Medienumgebungen (pp. 89-113),Verlag Reinhard Fischer: München.
- Tapscott, D. (1997). Growing Up Digital: The Rise of the Net Generation. McGraw-Hill: New York.
- Treumann, K.P., Meister, D.M. & Sander, U. et al. (2007). Medienhandeln Jugendlicher. Mediennutzung und Medienkompetenz. Bielefelder Medienkompetenzmodell. VS Verlag für Sozialwissenschaften: Wiesbaden.

KEY TERMS & DEFINITIONS

Podcast:
• Also known as: audio podcast, video podcast
• Similar to: teleteaching, broadcast, online-lecture
• Associated in the manuscript with: Internet method for transmission of lectures by distributing or streaming audio or video media files
• Notable appearances of this term can be found on:
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ePortfolio:
• Also known as: electronic portfolio
• Similar to: personal documents, dossier, map
• Associated in the manuscript with: collection of personal documents in electronic format, assembled by the author or owner of these documents in a special software
• Notable appearances of this term can be found on:
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Weblog:
• Also known as: Web-based log file
• Similar to: website, diary
• Associated in the manuscript with: websites that are used as diary, for journalistic purposes, or to disseminate opinions. Weblogs are open for comments by others contrary to normal websites
• Notable appearances of this term can be found on:
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diversity:
• Also known as: variety of species, attitudes, social behavior
• Similar to: difference, dissimilarity, variety

• Associated in the manuscript with: distinction of individuals and groups with regard to spending leisure time and developing lifestyle attitudes differently
• Notable appearances of this term can be found on:
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Factor analysis:
• Also known as: principal component analysis
• Similar to: cluster analysis
• Associated in the manuscript with: statistical multivariate methods used to investigate variations between variables and within samples and to describe the diversity among members of social groups
• Notable appearances of this term can be found on:
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Page - 14
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Digital Divide:
• Also known as: dicrimination
• Similar to: social divide, economic divide, usability divide
• Associated in the manuscript with: gap between those who own computers and those who do not, between those who have access to the internet and those who have not. It is more and more recognized that there develops a new divide between those who master an information competence and those who lack the competence to evaluate information critically.
• Notable appearances of this term can be found on:
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Social communities:
• Also known as: Social software
• Similar to: association, club
• Associated in the manuscript with: Web-based software that grants users a membership and enables communication, file exchange and sometimes collaboration between them
• Notable appearances of this term can be found on:
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New Millenium Learner:
• Also known as: Net Generation, digital natives, generation Y
• Similar to:
• Associated in the manuscript with: literature that speculates about the attitudes and preferences of youth regarding computer usage and Internat use
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[1]http://www.oecd.org/document/10/0,3343,en_2649_35845581_38358154_1_1_1_1,00.html; the term was adopted by Howe & Strauss (2000).

[2] http://www.elearningpapers.eu/index.php?page=fix&id=14

[3] Mode or modal value is the most frequent observed or measured value of a frequency distribution, whereby mode is not identified by its frequency but by the scale value with which it occurs.

[4] Other examples of studies on media use that generated group characteristics of users by means of factor analysis or cluster analysis as well as the methodological aspects of these methods are discussed in Schulmeister (2008), e.g. Treumann, Meister, Sander et al (2007), ARD/ZDF-Nutzertypologie (Oehmichen & Ridder, 2003 und Oehmichen & Schröter, 2007).

[5] In our study, of the 2096 respondents to the question about having experience with LMSs, 889 =42.4% answered "yes" and 1207=57.6% answered "no." The question how about how often they use LMSs was answered by 282 "I am not familiar with the method" and 1051 "never." These 1333 participants comprise 64%. The frequency of use of LMSs by the remaining 763=36% was rather evenly spread over the time scale: daily 76, weekly 265, monthly 209, every few months 213. Daily use is the least frequent case. In the HIS-study, LMSs are not offered at 31.6% of the respondents' own universities, and are not used by 21.2% (Total 52.8%). The distribution of uses of LMSs is also rather evenly spread over time in the HIS-study: very often: 11.2%, often: 23.5%, sometimes: 8.9%, rather seldom:14.4%, and seldom: 7.9%.

[6] The data of the HIS-study on social bookmarking: 37.8% are not familiar with social bookmarking and 45.2% don't use it. Only 17% use social bookmarking, varying from 0.3% very frequently through 11.7% very seldom.

[7] The HIS-study reported for the question „Do you write articles in Wikipedia? ": 85.1% never do it; the remaining 15%, do it very seldom, 10.7%. If one considers that only those participants who know Wikipedia actually answered, then 86% actually never write articles. Similar distributions were found for "revising articles" and "participating in discussions about articles."

[8] Data of the HIS-study for audio podcasts: 12.9% are not familiar with audio podcasts, 43.5% do not use them; the remaining 43.5% use them often (1.1%) to very seldom (23.0%). The mode here is also "never." Audio podcasts of presentations at the university: are not offered (63.4%), are never used (22.4%); use varies between very often (1%) and very rarely (4.6%).

[9] Data of the HIS-study for video podcasts: 9.8% are not familiar with video podcasts, 41.6% do not use them; the remaining 48.5% use them often (1.2%) to very seldom (22.8%). The mode is "never." Video podcasts of presentations at the university: are not offered (62.0%), are never used (20.1%); use varies between very often (2.3%) and very rarely (4.5%).

[10] Comparable data from the HIS-study: 7.2% are not familiar with weblogs, 46.4% do not use them; the remaining 46.3% use them often (1.9%) to very seldom (24.6%). The mode is "never." Weblogs used as a method of study at the university according to the HIS-study: are not offered (55.6%), are never used (28.9%); use varies between very often (0.3%) and very rarely (6.2%).

[11] Comparable data from the HIS-study for Wikipedia: 60% use Wikipedia often and 40% seldom, but only 0.2% are not familiar with it, and 0.7% do not use it. HIS specifically inquired about domain specific Wikis: 5.8% are not familiar with them, 16.4% do not use them; only 3.9% use them often and 24.3% very seldom. Wikis are not offered for university courses 49%, are not used 20.8%; the use varies between very often (1.7%) and very seldom (6.8%).