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Web-based Communication in an Intercultural Learning Project – Analysis and Development Potentials of the Global Teenager Project

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January 31, 2010

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Abstract

The present study analyses the nature of online communication and its position in the Global Teenager Project, a web-based intercultural learning initiative. It attempts to deduce development potentials for improving project participants' experiences as well as to increase the extent to which pedagogical project goals are met. In order to locate the project in a theoretical frame, deliberations in the first part of the study draw on theories related to the fields of online learning, intercultural communication and computer-supported collaborative learning. In the analysis part of the study, prior to the derivation of the conclusion, students' expectations and needs were assessed using two surveys. It was found that a considerable development potential related to interactive student-to-student communication exists. The author thus proposes and evaluates, after conducting a requirements analysis, three community software alternatives which meet the specific needs of the project. The value of this study further lies in the analysis of habits of access and use of information and communication technologies, utilizing samples from 258 participants in 11 countries.

Zusammenfassung

Die vorliegende Studie analysiert die Online-Kommunikation des webbasierten, interkulturellen Schüler-Lernprojekts „Global Teenager Project“. Sie zielt zum einen darauf ab, Entwicklungspotenziale für die Verbesserung der Teilnehmerzufriedenheit aufzudecken, und zum anderen die Erreichung pädagogischer Projektziele zu verbessern.

Um dem Projekt einen theoretischen Rahmen zu geben, erfolgt im ersten Schritt eine Darlegung der für die Arbeit bedeutsamen Theorien aus den Bereichen E-Learning, Interkulturelle Kommunikation und Computer Supported Cooperative Learning. In einem weiteren Schritt werden anhand von zwei Befragungen weiterhin die Erwartungen und Bedürfnisse der Teilnehmer analysiert und diskutiert. Aus dem Ergebnis der Untersuchung lässt sich ableiten, dass ein deutliches Entwicklungspotenzial im Bereich der webbasierten, reziproken Kommunikation der Pojektteilnehmer besteht. Die Autorin bewertet und empfiehlt infolgedessen, aufbauend auf einer Anforderungsanalyse, drei alternative Community-Softwarelösungen, die den besonderen Anforderungen des Projekts gerecht werden. Desweiteren gibt die Studie einen Einblick in die Nutzungshäufigkeiten und -gewohnheiten von Informations- und Kommunikationstechnologien von 258 Projektteilnehmern aus 11 Ländern.

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Acknowledgements

Many people have supported and encouraged me throughout the production of this thesis during the last months. I am most grateful to Eliane Metni and Bob Hofman, as the current Global Teenager Project coordinators, who have opened up to me many valuable insights into the reality of the project, provided me with data, and have put me in contact with people who could help me further. Saskia Harmsen, officer knowledge sharing at the International Institute for Communication and Development, has spent numerous hours brainstorming and discussing topics related to this thesis with me - I would like to thank her for all her support. Thanks are also due to all Global Teenager Project country coordinators who have forwarded my surveys to schools in Africa, Argentina, Canada and Europe.

Additional thanks go to all those who supported me with proofreading texts and coding answers - their help is very much appreciated:

Stephanie Baudains, Alice Dickinson, Victoria Gilday, Maria Glätzer, Annika Hackerschmied, Bernd Hutschenreuther, Nils König, Svea Möhle, Linda Przyborski, Svenja Tegel.

I would like to thank my supervisors, Prof. Dr. Joachim Griesbaum and Prof. Dr. Thomas Mandl for their helpful and timely advice - no matter what day of the week or what time of the day.

Last but not least, I have received invaluable support from Christoph Peschel. Without his technical expertise, this thesis would not have been typeset as professionally and as beautifully as it is now. While his culinary contributions always kept me healthy and well-fed, his mental support helped me regain the right direction in difficult phases.

Part I.

Context and Concepts

1 Introduction

1.1. Motivation

The Global Teenager Project (GTP) has accompanied me during the four month of my internship at the International Institute for Communication and Development (IICD) in The Netherlands.[1] One of my tasks there was to prepare an exhibition stand during a fair on Dutch-African development cooperation.[2] In order to include an interactive component for visitors of the exhibition, I developed the idea of a live messaging feed which was implemented and displayed on big screens.[3] Visitors could use computers at our stand to post their messages, and at the same time we asked a school in Ghana to participate from the computers in their schools. Visitors and students in The Netherlands and in Ghana enjoyed the event and the live message feed in particular.

This was when I realized for the first time that GTP students, and young people in general, develop a great motivation to learn from each other when they are given the chance to express themselves and by engaging in an active dialogue without much need for direction by a supervisor. While I accompanied the relaunch of the GTP website, I got in touch not only with the project coordinators, but with many inspiring teachers and professionals in the field of ICT in education from more than 20 countries. The more insight I gained into the project, the more I realized that the GTP yet holds many development potentials, both, from the side of the students as well as from that of the teachers. It is these potentials that the present study examines from theoretical and practical points of view.

Soon, the challenging nature of this undertaking became clear: How can one draw conclusion that apply to all participants of a project which involves 35 different countries on five continents? Where are the reliable, fixed points that guide the line of arguments? How can one best keep the balance between the appealling simplicity of email exchange (possible

[1] Note: At this point, the author lays out her personal motivation for engaging in this study. So as not to maintain an artificial tone of voice, this part is written in the first person. The rest of this work adheres to scientific standards by avoiding self-referential language.

[2] Afrika Dag 2009, cf. http://www.afrikadag.nl/ (accessed: 2009 December 24, 10:03 CET)

[3] Unless otherwise stated, whenever only one gender is used, both, women and men are refered to throughout the entire paper.

for even the most remote schools) and the demand for a more direct interaction between participants? However, it has turned out to be a great but rewarding challenge to contribute to this meaningful project at the interface of many fields of research.

1.2. Aims of this Study

As the title implies, this study aims at identifying development potentials with regard to student communication of a web-based intercultural learning programme.[4] Founded by a non-governmental organisation which is active in the field of Information and Communication Technology for Development[5], the Global Teenager Project puts the dialogue between the richer northern hemisphere and the economically marginalised Southern hemisphere into reality by applying Information and Telecommunication Technologies (ICTs)[6] for co-operative learning between students from different cultures. From a participants' point of view, this research paper investigates the extent to which expectations of GTP participants comply with GTP's normative aims as well as with currently discussed theories related to online learning in an intercultural context. It will be argued that traditionally discussed learning theories focussing on a classical teacher-learner hierarchy do not do justice to a changing learning context. Rather, it is debated that they should be amended, as a new generation of teachers and learners is entering the educational institutions. This generation is becoming accustomed to deploying new communication technologies as their daily routine and acquires their ICT literacy at an earlier stage in their lifes. [Schulmeister, 2008] Further, with the proliferation of the Internet, ICT literacy is a skill which is becoming more and more important; an understanding which has led to political inititiatives such as the e-learning action plan within the countries of the European Union. [cf. Uzunboylu, 2006] Following various scholars in the field of learning theories, the approach of student-initiated, personal learning, wich aims at teaching meta-learning skills as opposed to the transmission of content, is therefore considered appropriate for the context of this study. (Section 3.1) The emerging theory in this field, connectivism, is therefore critically discussed. (Section 3.1.4)

The results of the analysis of the design of GTP as well as those of two surveys among participants show that current GTP practice implements well many aspects derived from theories (e.g. a sense of community, the development of meta-learning skills, such as reflective writing and critical thinking). Yet, they also point towards a lack of personal student-to-student communication across classrooms. From these considerations, it is suggested that providing

[4] Although this study focusses on increasing the benefits students derive from participating in the Global Teenager Project, those of teachers, although equally important, are not considered within the scope.

[5] For a comprehensive overview on recent developments in this field, refer to the book ICT4D by Unwin [2009].

[6] This study adhers to Hamelink's definition "ICTs encompass all those technologies that enable the handling of information and facilitate different forms of communication among human actors, between human beings and electronic systems, and among electronic systems."[Hamelink, 1997: 3] when the abbreviation ICT is used.

students with the possibility for sustained cross-cultural interaction and dialogue, some of GTP's main goals could be enhanced considerably: that of developing intercultural awareness as well as engaging more students in using ICTs for research purposes. Therefore, the last part is dedicated to finding an appropriate community software solution whose implementation might not only meet students' expectations, and thus enhance their satisfaction, but it might also help to support external, normative pedagogical aims. The software selection is done by conducting a requirements analysis and consequently presenting three relevant solutions as well as appropriate ways for their implementation.

Next to a strategy for the practical improvement of the GTP, this study provides an insight into the habits of computer and internet use of GTP participants from 11 countries. As most surveys investigating children's online behaviour only look at European and/or North American countries, the surveys conducted in the frame of this study contribute to a more comprehensive and global view. [Cf. the 46 studies compared by Schulmeister [2008] and also see section 4.1] More precicely, it identifies which patterns of computer and Internet use exist in terms of frequency and location across continents and demonstrates the variety of activities students engage in during their time online.

1.3. Outline of this Study

This thesis is divided into three parts. The first starts with a description of the background of the Global Teenager Project, introducing development (Section 2), roles (Section 2.2), aims (Section 2.3), means of communication (Section 2.4) and the concept of Learning Circles. (Section 2.5) These reflections help identify interconnections between those involved in the project and how the current design uses ICT in education. These insights will be used in the final chapters when the roles and interconnections are transferred into a community software's data model. Further, this part presents similar projects and compares their approach to that of the GTP. (Section 2.6)

The second part investigates theories of the various fields of study related to the context of communication within a web-based intercultural learning project: learning theories (Section 3.1), intercultural communication (Section 3.2.1), computer-mediated communication (Section 3.2.1), and computer supported cooperative learning (Section 3.3). Their main aspects are worked out and applied to the context of the GTP in order to localise the project within a theoretical framework as well as to derive implications for identifying development potentials in the following chapters. (Section 3.5)

The latter is achieved throughout the third and practical part of the study by combining different viewpoints to support the claim for and establish the nature of the development potentials. Before deriving implications from a theoretical point of view (Section 4.2), the survey instruments used throughout the line of arguments in this part, including their methodology

and possible restrictions induced by it, are presented (Section 4.1). The next chapters combine the results of three empirical methods the author applied. The first is a survey aimed at defining expectations held by fist-time GTP students towards the project, whereas the second critically discusses and analyses GTP's self-set aims by mapping them against students' subjective reasons for their goal achievement after having participated in a GTP Learning Circle (Section 4.5). Here, the need for an additional communication component within GTP is identified. In a next step, a second survey enquires about students' ICT infrastructure and their habits of computer and internet use (Section 4.6).

The results from this part lead the line of arguments towards the last and fourth section, which combines all results in order to derive concrete suggestions for addressing the development potentials identified. It is concluded that a social networking software application may accomplish this if implemented in an appropriate way. Therefore, after including further theoretical considerations derived from the thesis' second part, criteria which this type of software implementation should meet are established while taking into account contextual implications, such as legal, infrastructural and organisational factors deducted from previous chapters. (Section 5.1) They are further divided into functional, performance or specific quality requirements, as well as constraints, and prioritised so as to develop a basis upon which the decision for the most appropriate type of software can be taken. (Section 5.2) A data model implemented in a diagram using Unified Modelling Language (UML) notation, further outlines how requirements may be implemented from a software architecture perspective. (Section 5.2.1) After engaging in a research phase where enquiries were made about potentially suitable software projects, those meeting all must-have criteria are selected for final consideration and matched against all requirements and constraints. In a final discussion of the results, advantages and disadvantages of each solution are outlined before the overall approach of this thesis is subjected to a critical review. Final thoughts give further research impulses which better address the challenges encountered during this study. They also provide an outlook on further steps necessary towards a realisation of the suggestions which were made during this study.

Describing the Global Teenager Project | 2

This chapter presents the concept, development and people involved in GTP. It also describes the project's aims, its structure and the tools employed. The last part describes the organisational and pedagogical approach of Learning Circles.

2.1. Concept and Development

According to the International Institute for Communication and Development (IICD)

> "The Global Teenager project is a rapidly expanding virtual network of secondary schools in both the developing and developed world and an upcoming generation of information-literate, knowledge-oriented, culturally-aware individuals."[1] [International Institute for Communication and Development, 2009]

On a practical level, participating schools chose one of the presently 50 offered themes (e.g. "Migration in our country" or "Life values") in six languages (English, French, Spanish, Dutch, German and Arabic) and take part, together with several other schools from around the world, in a structured 10-16 week course. In a prescribed sequence of message exchanges, they will introduce themselves, post questions on the topics, conduct research on and answer the questions of the other participating schools, write a summary of all responses and finally submit a good-bye-letter. This sequence is called a Learning Circle. [Riel, 1995] Offered themes are divided into age groups (9-12, 12-15 and 15-18), language,

[1] The terms data, information and knowledge are used extensively in everyday language - sometimes with an unclear and even overlapping denotation. [Lehner, 1999] Yet, a precise scientific approach requires an unambiguious definition. Throughout this study, the meaning of these terms are defined according to common understanding in the field of Information Science. Following this comprehension, data are an aggregation of conventionally determined signs and exist independent of interlocutors' mental interpretation. [Griesbaum [2006: 14], Lehner [1999: chapter 4.3.]] Once data are interpreted by a person in a particular context, they are transformed to information. Thus, information is always relative to the interpretation context and to the interpreting person. [ibid.] Only by the action of interpretation do semantically relevant data receive an added value and consequently turn into information. [Griesbaum, 2006: 14] When the interpreter moves this information from the particular context under which it was acquired by structuring and internalising it, knowledge is generated. Lehner [1999: chapter 4.3.] As a result, only data, not knowledge, may be stored digitally.

type (research or communication based) and platform (wiki or email), leaving it up to the coordinating teachers to chose a category depending on the ability and language level of their students. [The Global Teenager Project, 2009b] The type of a Learning Circle is determined by its focus on either research on the specific topic or communication in the respective language.

Initially founded by IICD, GTP started off in 1998 with three schools from South Africa and the Netherlands, who engaged in an Internet pilot exchange project. [International Institute for Communication and Development, 2009] In the following years, coordination changed through Schoolnet South Africa[2] in December 2003, on to Mindset[3] in 2005, both not-for-profit organisations in South Africa. In May 2008, IICD handed over the coordination of the project to Stichting Round Table, a Dutch foundation dedicated to "global learning" where it is going to stay until at least 2012.[4]

In the year of 2009, a total number of 229 groups, including schools with special-needs students, from 35 countries have taken part in GTP Learning Circles. The distribution across countries and continents is visualized by figures 2.1 and 2.2.

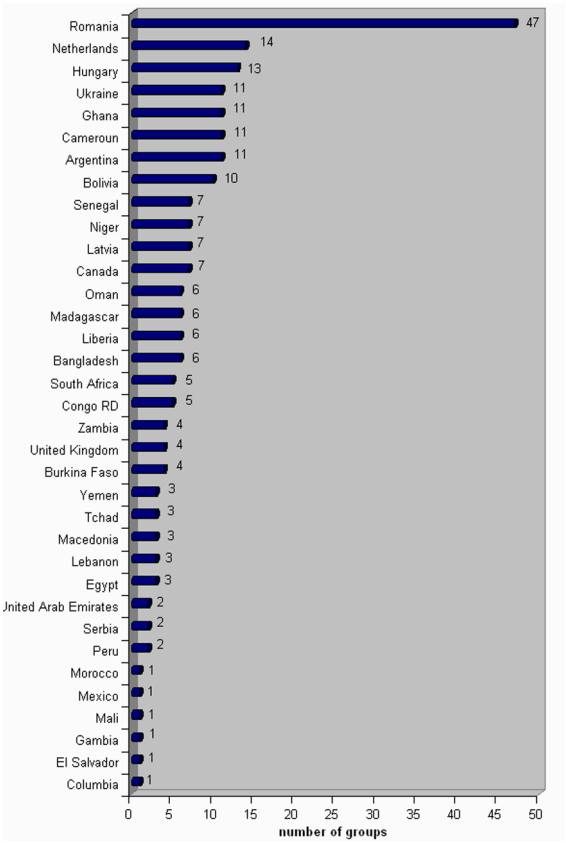

Figure 2.1.: Number of participating GTP groups by country for the second round of 2009 Learning Circles (September-December) Source: Bob Hofman, GTP project coordinator

[2]Cf. http://www.school.za/ (accessed: 2009 November 23, 09:36 CET)
[3]Cf. ,http://www.mindset.co.za/ (accessed: 2009 December 4, 19:31 CET)
[4]Cf. http://www.c4gl.org (accessed: 2009 November 30, 09:30 CET)

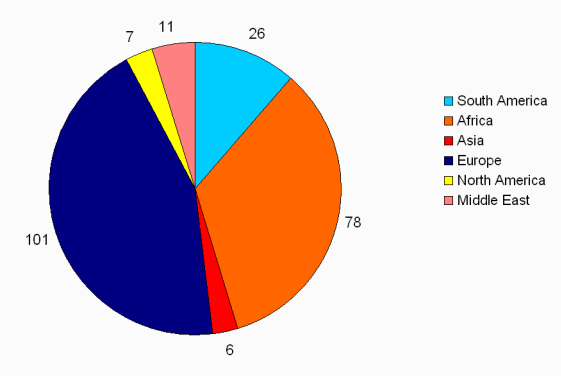

Figure 2.2.: Number of participating GTP groups by continent for the second round of 2009 Learning Circles (September-December) - Note the equal distribution across the northern and southern hemisphere.

2.2. Roles

There are five main roles within the project. Knowledge about roles, their tasks and flow of communication within GTP can help with understanding interests and interconnections of all people involved.

School classes and their teachers[5] are the primary beneficiaries of the project. Teachers are sometimes given basic training in employing Information and Communication Technologies (ICTs) in educational settings prior to taking part in a learning circle with their class. Funders are external institutions that support GTP financially or with e.g. educational training activities. Country coordinators are responsible for all participating schools within one country. They make sure classes meet their deadlines, grade results, keep track of schools' progress, are the links to local educational policy makers and will try to include GTP in their country's school curricula. Facilitators are usually country coordinators themselves with the extra task to coordinate all Learning Circles in one language taking place during one specific round of Learning Circles. They monitor the progress of the phases in the respective online environment (wiki or email list) and give direct instructions to participants. Project coordinators are responsible for public relations, organising events, maintaining the links with country coordinators and schools, managing the funding and coordinating the set up of the Learning Circles. Currently, they are Eliane Metni, and Bob Hofman from the Netherlands. [The Global Teenager Project, 2009a] Chapter 5.2.1 describes interconnections between individuals involved in the GTP from a data modelling perspective.

[5] In some schools, Learning Circles are carried out as extracurricular activities, in others, they are well integrated within the school's curriculum and individual lessons. In other cases, students take part in out-of-school projects. When using the term (school) class, all such groups will be referred to

2.3. Aims

The objective of this study is to investigate development potentials within the Global Teenager Project. As a first step, this chapter presents main goals. Later chapters will analyse to what extent these goals. This evaluation will be based on subjective self-assessment of goal achievement by students. As an outcome, deficiencies will be identified and subsequently a concept will be developed to address these deficits. Therefore, a concrete identification of GTP's aims is essential.

GTP's mission is described in the following statement:

> "To offer educational virtual exchange programmes to secondary school students worldwide, dedicated to promote cross-cultural understanding through new ways of learning, using ICTs." [ICT&E, 2009]

As stated in the GTP Teacher's Guide, there are five main goals, each including several subgoals.

1. Share Individual, Regional, and Cultural Perspectives
   - i) Promote intercultural and regional understanding and sensitivity
   - ii) Understand how regions are similar and different
   - iii) Explore issues of national and global significance
2. Foster Problem-Solving and Critical Thinking Skills
   - i) Engage students in thoughtful choice of a question for the Learning Circle
   - ii) Involve students in research as they respond to questions
   - iii) Develop students' ability to collect, interpret and present information to others
   - iv) Improve map reading skills as students locate the Circle schools
3. Enhance Communication Skills
   - i) Encourage students to use writing to share ideas with others
   - ii) Provide opportunities to read, evaluate and edit the work of others
   - iii) Promote writing across the curriculum
4. Develop Co-operative and Collaborative Work Strategies
   - i) Learn to work as members of a team with peers in other places
   - ii) Understand responsibilities that come with group participation
   - iii) Learn how to work co-operatively with partners in distant locations
5. Learn to use Telecommunications Technology
   - i) Understand how computers are used to exchange information
   - ii) Gain experience in working with computers
   - iii) Be aware of 'Netiquette' in electronic communication

   [Riel, Hofman, & Metni, 2008: 6]

Goals range from pedagogical aims (promoting writing across the curriculum) to social capacity building (learning to work as members of a team with peers in other places) and technical capacity building (learning to use telecommunications technology). GTP coordinators hope that curricular integration of the project can help make GTP more sustainable and strengthen support among stakeholders. [Riel et al., 2008: 17-18] The variety of goals makes it possible for teachers of different subjects to attempt curricular integration. It is from these goals that the nature of GTP can be derived: there is a focus on communication, intercultural understanding and group learning.

Beyond the goals aimed at students explicitly stated here, there are further goals aimed at various target groups. Teachers receive pedagogical and methodological training. By approaching political stakeholders, their attention is drawn to the importance of ICTs as a tool for education and development, thus facilitating the integration of GTP in school curricula.

Although using telecommunications technology is one of GTP's main goals, they are not seen as a means to an end. "Computers and computer networking are very efficient tools for motivating learning and publishing student work. However, they will never replace teachers and the valuable role teachers play in organising educational experiences. [Riel et al., 2008: 7] In the frame of GPT, teachers are asked to complement their thematic teaching with ICT and computer skills, which can be integrated to support overall learning.

It should be noted furthermore that in addition to learner benefits, teachers' learning benefits are equally important from the point of view of GTP project coordinators and initiators. [cf. the email from Margaret Riel; appendix 6.3] However, in order to narrow down the scope, the focus of this study will lie on students' learning benefits and their development potential with regard to online communication in particular.

2.4. Means of Communication

All online communication during GTP is restricted to the functionality offered by the online tools used during a Learning Circle. Therefore, this chapter briefly presents the two tools employed during GTP. The technological tools used to carry out the project are a wiki software (PBworks, `http://www.pbworks.com`) and an online email-based knowledge-sharing platform (Dgroups, `http://www.dgroups.org`). Raitman and her colleagues describe the concept of a wiki as "[...] a completely interactive website which is driven be [*sic*] a specialized web server generating dynamic pages from the results of visitor edits." [Raitman & Augar, 2005: 1] This also applies to the pages created by Pbworks.

Dgroups, on the other hand, has a less common set-up and is therefore harder to define. It was tailor made in 2002 for the purposes of a group of seven institutions[6] working in the development sector in order to "Provide open and accessible Internet spaces and services where members [...] can safely share information, collaborate and engage in dialogue and networking." [Akinsamni, Aranguren, Chatani, Kruiderink, & Stanton, 2007; Dgroups, 2009a, b] Discussion of and access to content on Dgroups takes place via chains of emails which may be written from any email client to the group's email address. This way, storing the two-dimensional tree of conversation (as opposed to the multi-dimensional hypertext structure of wiki pages) and thus displaying it to the class is possible also in classrooms which are not connected to the internet.[7] Alternatively, the user may log in directly to the Dgroups website. There, he will find a history of the conversation and possibly uploaded files within that group. 2.1 provides a list of more functionalities.

For each Learning Circle, either a Pbworks wiki page or a Dgroup discussion group is created by project coordinators. Teachers are given a unique ID for their classes which is linked to their contributions in both Wiki and Email communication. Individual students are not provided logins for neither platform. Wiki Learning Circles may make contributions through editing their respective Wiki page. Those participating in Dgroups Learning Circles do the same by sending an email to their Learning Circles' email address or alternatively accessing their Dgroup by logging in at the services' website and answering the discussion threads there.

Both platforms aim at easy access and high levels of usability for users with low bandwidth ICT infrastructure as well as those with lower computer literacy skills. [Akinsamni et al., 2007: 50] Neither tool requires download nor installation by participants. Wiki learning circles naturally require a more developed participants' ICT infrastructure and connectivity as editing contributions can only occur while connected to the internet. For Dgroups Learning Circles, email contributions may be written offline and sent later on when an Internet connection has beeen established. This is an advantage for users with low-bandwidth or connectivity problems. You may refer to the following table 2.1 for a comparison between the two tools.[8]

[6] Bellanet; Department for International Development (DFID); Institute for Connectivity in the Americas (ICA); IICD (International Institute for Communication and Development); OneWorld; Joint UN Programme on HIV/AIDS (UNAIDS); UN Economic Commission for Africa (UNECA)

[7] This is crucial to GTP as many participating schools are located in remote areas with very low connectivity. However, this is where mutual learning potential lies for students from technologically more as well as less developed regions.

[8] In the current version of the GTP Teacher's Guide, the possibility to participate in a chat is mentioned as well. [Riel et al., 2008] Chats have been experimented with only during a few Learning Circles,and were not successful and droped as a result. (also refer to chapter 5.1) Therefore, chat as a regular GTP means of communication is not considered at this point

	PBworks	Dgroups
Owner	PBwiki, Inc.	In 2009, hosting of Dgroups has moved from a formerly lose group of organisations active in the development sector to the Dgroups Foundation
User requirements	Web browser, Internet access	Web browser or email client (locally installed or web-based), Internet access
Features	Wiki functionalities: add/edit/delete pages, upload/edit files, place links, post comments, review history, edit profile information	Through Dgroups website: Reply to/forward discussion threads online (forum functionality) attach files; participating through email: reply to discussion thread by sending an email to the group and attach files
Privacy	Content created during learning circles is public to everyone; Individuals' email addresses are visible to page members	Emails sent during learning circles add to discussion threads; They are only visible to group members; Individuals' email addresses are visible to group members
Access	Users must be invited to join an existing page; Anyone can create a page with the free software; Advanced functionalities are available upon payment; Facilitators create pages before learning circles start and invite teachers	Organisations working in the development sector pay a membership fee in order to be able to use the platform; Users must be invited to join an existing group facilitators create dgroups before learning circles start and invite teachers

Table 2.1.: Comparison of features of Dgroups email lists and PBworks wiki page workspaces

2.5. The Concept of Learning Circles

GTP's core element is the concept of so-called Learning Circles. Therefore, this concept is laid out briefly in the following.

The concept of online Learning Circles dates back to the Californian educator and scientist Margaret Riel, who developed it out of a commonly used method for informal and offline group learning. She quotes examples from the US-American 19th century Chautauqua movement[9], and many other educational initiatives such as those from religious or charity institutions. [Riel, 2006: 147] There, the idea of small groups of learning communities was used to make higher education available to those who could not attend college. Through such groups, learning could take place in informal groups that met to collaboratively discuss learning materials. [ibid.] Offline Learning Circles, sometimes also referred to as study circles, have also been employed extensively in Sweden [Suda, 2001] and for many centuries in the form of group-learning environments within a classroom or some other form of educational setting.

[9] An adult education movement in provincial parts of the United States of America

Moving the idea of small-group self-initiated learning to an online setting, the process of learning changes fundamentally with dispersed groups communicating that do not meet in person, and that might not even know each other personally. When talking about online learning circles, Riel defines them as "[...] teams of learners situated in diverse locations who share a common goal for acquiring a deeper understanding of topics arranged around themes." [Riel, 2006: 147] Both concepts of Learning Circles, offline and online, thus share the notion of a somewhat self-initiated, democratic learning setting with an existing but low level of input from the instructor. When network technology is added, learners may be in different locations and communicate asynchronously. Just as important as the virtual classroom are the learning activities that take place within local classes: students conduct research and presentations on the theme, hold discussion with class mates and thus, learn about themselves. [Riel, 1995: 221]

The following paragraph describes what is specific about a GTP learning circle. When the term Learning Circle is used during this thesis, this is what is referred to. In GTP, the way in which students are guided through the project is such that school classes are clustered around themes which are offered twice a year. These groups will then collaboratively go through predefined phases usually lasting 10-16 weeks. The following activities are carried out during each phase:

1. **Preparation** (Week0) Accepting invitation from wiki group and posting test messages of Learning Circle. Introduction workshop,teachers prepare their students for participation in the Learning Circle. Discussion of responsibilities, skills, knowledge, awareness. Sorting things with GTP Country Coordinator, with the help of the facilitator.

2. **Introduction** (Week1) Official opening of the Learning Circle with the facilitator's welcome message. Teacher and students introduce themselves by posting a Class and Teacher letter and a class picture on the wiki site.

3. **Questions** (Weeks 2-3) Each class formulates a question on their Learning Circle theme according to criteria for quality research sponsored question.

4. **Research** (Weeks 4-7) Each class researches and responds to all the questions from the other classes in the Circle and at the same time receive answers to their questions.

5. **Summarize** (Weeks 8-9) Each class summarizes the questions received from other Learning Circle partners post them to the wiki site.

6. **Closing** (Week10) Complete evaluation forms and post goodbye message to the wiki sites. Official closing of the Learning Circles by the goodbye message of facilitator. [ICT&E, 2009]

Phases are set to different lengths according to the amount of time students will take in order to successfully complete tasks. During the course of one Learning Circle, school classes will prepare the documents that are shared with partner classes within a specific time frame either through the Learning Circle's wiki page or through its Dgroup. The Facilitator will

support each class by reminding of deadlines, answering questions and finally, by grading the classes according to punctuality and quality of contributions.

For the discussion in the following chapters related to the effective set-up of an online learning environment, it is important to note that the focus of Learning Circles is a group focus. Online communication is carried out between groups of students. Offline communication takes place among individual learners in their class room. Much traditional e-learning research looks at facilitating education for individuals who are geographically distant with no or only a few face-to-face meetings throughout the course in order to point out or evaluate the effects on the individual learner that result from the shift of delivering content face-to-face to delivery via an online setting. [see Campos, 2004; Garrison, Anderson, & Archer, 2001; Meyer, 2004; Raitman & Augar, 2005] Exceptions include Wozniak [2004] and Bower [2007], whose studies contain offline group discussion elements. Wessner & Pfister [2001] differentiate between learning objective as the aim for every individual learner or for the entire group (cooperative learning). He identifies three CSCL group learning scenarios:[10]

1. Local groups that work on learning material face-to-face using ICTs
2. Larger groups that communicate asynchronously over a longer period of time to discuss a common problem or theme, and
3. Distributed smaller groups that autonomously discuss learning material with synchronous communication tools. [ibid.]

(Also cf. chapter 3.4). In GTP, as shall be outlined in later chapters, most discussion between students takes place face-to-face within one classroom. Therefore, Wessner's first scenario can be applied.

Learner-learner interaction, as outlined by Anderson [2008], is a major factor when it comes to increasing social skills. Anderson [2008: 46] and also Bower [2007: 143] mention student satisfaction when these are given the chance to interact. Researchers also point out the importance of an active dialogue between learners. [Pilkington, 2001: 3] Thus, the offline class room communication component of GTP needs to be kept in mind when comparing with other studies in the field of e-learning. In summary, the most important characteristics of the GTP are:

- Web-based group-to-group interaction;
- Offline student-to-student interaction;
- Focus on accessibility of the project to students with special needs as well as schools with a low level of ICT resources and/or connectivity;

[10] In his definition, cooperative and collaborative learning refer to the same concept: there is a commonly shared learning outcome which is aimed at by all individuals. [Wessner & Pfister, 2001: 251] Also refer to chapter 3.3.1 for further disambiguation of the terms

- Higher-order learning and communication skills (intercultural awareness, communication and critical thinking skills, cooperative learning skills; cf. chapter 3.5)

When comparing the three basic aspects fundamental to the pedagogical concept developed by John Dewey (1889-1552), discussed by Janneck [2004a][11] to GTP, it becomes apparent that the two concepts share many characteristics. Janneck [2004b], following John Dewey, outlines ninecharacteristics of educational projects.[12] The following paragraph provides an overview together with an indication for each how it is implemented into GTP.

Alignment on participants' ambitions (Orientierung an den Interessen der Beteiligten) Content and central topic of the project should be in line with participants' interests and wishes, and should be, if necessary, negotiated continuously. Applied to the GTP, this means that students are in charge of posting their own questions for other classes to answer. In this way they can directly influence which aspects of a theme are covered.

Relevance to the society's reality (Gesellschaftliche Praxisrelevanz) The project should be about a topic directly related to, and aimed at improving a meaningful societal issue. This means for GTP that themes are discussed and decided on in an annual meeting of all country coordinators, who are usually active teachers or educational stakeholders in their home countries. This way, all Learning Circle themes are close to students' reality. It is the teacher who selects a theme for their class, so that cultural appropriateness is ensured. For example, due to differing cultural values, it might not be appropriate for Yemeni female students to talk about transmission of sexual diseases.

Situational relevance (Situationsbezug) Similar to the concept of situated learning Kerres [2001: 77], projects start out from a real-world problem which is easily comprehensible to students. In the context of GTP, this means that after selection of a theme out of the list of offered themes, a classroom discussion facilitated by teachers should help provide a first overview and help students identify with the selected theme. There are always topics offered for younger students with a close relevance to their own life's reality, such as "Teenlife" or "Sports and Games". Although they might seem less politically controversial, students are eager to find out about daily routines and personal preferences of students from other nationalities.

Purposeful planning Project activities should be set around a schedule delimiting time and content; responsibilities and tasks should be distributed. The tight structure and pre-determined phase set-up of GTP allows participants to focus on project activities.

Voluntary project organisation and responsibility Students are considered competent enough to define their own aims and objectives, although facilitators are still valued in their function of providing the necessary structures. In the case of GTP, teachers guide students through the project's phases while enough room is left for students to

[11] Dewey's basic aspects are: education towards democracy and self-determination, thinking while experiencing, and learning to solve problems. [Janneck, 2004a: 239]

[12] Originally, he names ten but in this systematic, the last (*Limits of project learning*) is omitted since it refers to the way a project is integrated into a field of study or into the context of a school subject. This is done locally in each school and thus beyond of what the overall GTP concept may account for.

become active themselves and decide on questions as well as come up with ideas on e.g. how to aggregate their research outcome. It is left up to the teacher to decide on students degree of independence during the project phases.

Involvement of many senses Throughout the project, discussion of the topic should not only focus on one kind of activity (e.g. cognitive) so that reference to reality is not lost. GTP activities throughout the different phases are described above. It can be seen that different activities are required for completion of phases by students. (e.g. research, discussion, and summary composition)

Social learning Learning in projects is inherently a social process; interaction among all participants will support not only learning from one each other, but also the development of social skills, which is just as important as achieving formal learning objectives. As has been described above, social learning is one of the main goals described in the GTP teacher's guide. (cf. chapter 2.3; Riel et al. [2008: 6] The importance of this aim for learning will be analysed at a later point. (cf. chapter 3.5.3)

Product orientation In contrast to traditional learning, where focus lies on the transmission of knowledge, a project should provide a meaningful tangible or visible outcome. Perceived value of this outcome may be increased if it is made public, enabling critical discussion and feedback by outsiders. Although not required by the GTP, the outcome of Learning Circles may include any type of medium a class declares sensible.

Interdisciplinarity Since it addresses real-life problems, a project should not only involve the limited view of one academic discipline. However, it might help students' orientation if concepts used are matched with those learned during formal education and during students' own experiences. GPT themes offered are clearly interdisciplinary. As indicated in the survey data collected by IICD after each learning circle, a great majority of teachers took part with their groups in a GTP Learning Circle as extra-classroom activity, in an after-school club or as a voluntary project (76.1%).[13]

2.6. Similar Projects

In order to further define the GTP, an overview of programmes in the context of intercultural web-based learning[14] that are similar to GTP are mentioned at this point. Criteria for selection were the following characteristics:

- Groups of students are paired-up;
- Work on each project is done collaboratively across cultures using ICT;
- Each project centres around one theme that can be selected;

[13] For the source of these data, please refer to the `iicd_students_survey.csv`. Alternatively, data may be obtained from the author.

[14] For disambiguation of terms, "web-based", "online" and "e-learning" are used interchangeably throughout this thesis.

- Each project is coordinated by a facilitator.

This list is not considered exhaustive but can help identify potentials for the GTP by giving an overview of possible approaches, organisational structures and foci.

2.6.1. eTwinning Europe

The project of eTwinning[15] was developed with the

> "[...] express purpose of twinning schools in Europe in a non-formal way." [Crawley, Dumitru, & Gilleran, 2007: 4]

When participating in eTwinning, teachers pair-up their classes together with one or more partner classes in another EU-member country to collaboratively work on a theme. Teachers sign up online for the project, decide on a theme and search for one or more partner classes in the community (partner finder) before starting their project.

ETwinning was launched in 2005 by the European Commission in order to "encourage all schools in Europe to form a collaborative partnership using many forms of communication technology." [Crawley et al., 2007: 2] It is also supported by the European Commission's Lifelong Learning Programme (Comenius). [ibid.] There is a well-established organizational structure with two main bodies of coordination: on a local level, 28 National Support Services (NSS) act as national activity coordinators. Their tasks include maintaining the national website, coordinating conferences and events and monitoring progress of eTwinning projects. On a European level, the Central Support Service is run by the European Schoolnet on behalf of the European Commission and works on maintaining the overall eTwinning portal while being responsible for content and technical functionality.

According to the project's own statements, number of participants has grown rapidly within the last years: from 40 000 registered teachers in June 2008 [Crawley et al., 2007: 5], to 65 000 in June 2009. [Crawley, Gilleran, Scimeca, Vuorikari, & Wastiau, 2009: 6] In 2009, there were 11 000 teachers active in projects. [ibid.] Participation is open to schools from EU member states including Norway and Iceland [Pinstrup, 2008].

The types of ICTs used include a community platform offered by the portal called "TwinSpace" with possibilities of file exchange, synchronous chat and writing personal messages within the community. The use of additional tools is encouraged (e.g. video conferencing, podcasting etc) [Hogenbirk, Galvin, Hunya, Selinger, & Zeidler, 2007: 21] Since the fall of 2008, social network functionalities have been added to the portal. Participating teachers can now take part in online workshops, create member (=teacher) profiles with personal information and pictures, post messages on other members' "walls" and contribute to forums. [Crawley et al., 2009: 5] During a pilot phase, virtual common interest groups for teachers have been tested. [ibid.: 49]

[15] Cf. http://www.etwinning.net (accessed: 2009 November 26, 09:05 CET)

In comparison with GTP, the following is observed:

eTwinning usually involves projects with two partners, whereas in a GTP Learning Circle there are usually more than 2 groups working together. [ibid.: 13] In eTwinning projects, the project structure is not pre-determined; aims and course plans are selected by teachers. They can also choose prepared project kits which provide ideas, pedagogical objectives and resources. In GTP, themes and the project phases are fixed, but resources must be found independently. Coordinators may bookmark relevant resources in the media section of the new website once this has been completed. [The Global Teenager Project, 2009c]

In contrast to GTP, which aims at including students in the shaping of the content discussed during a Learning Circle, eTwinning targets teachers in the first instance and the extent to which students' opinions are included depends on the individual project. [[ibid.: 15] and Crawley et al. [2007: 7 ff.]] GTP however explicitly contains the component of a student-centred course by letting students decide on content and material to be included (for example during the question phase in GTP). Additionally, eTwinning does not focus on inclusion of developing countries due to its European set-up. Therefore, the eTwinning platform does not take into consideration participants with a limited IT infrastructure, with most of the communication and cooperation activities offered requiring a stable and relatively fast internet connection (e.g. video conferencing, file exchange etc).

2.6.2. iEARN Learning Circles

Funded in 1988, iEARN (International Education and Resource Network)[16] has incorporated Learning Circles as part of its activities since 1995. [Kramer & Riel, 2009] It is registered as a not-for-profit organisation in Spain. Officially,

> "iEARN has pioneered on-line school linkages to enable students to engage in meaningful educational projects with peers in their countries and around the world." [iEARN, 2009a]

The objective in all types of projects is the use of ICTs in order to connect school classes from different countries. The iEARN Learning Circle projects are only one of the type of projects supported. At the time of writing, 110 teachers were actively working in 12 different circles. [Kramer & Riel, 2009]

Participanting teachers can use a community database with projects and teacher profiles; students are provided with a login for limited access to resources and the forum. Communication during Learning Circles occurs in an online forum where group messages are posted

[16] Cf. https://media.iearn.org/node/483 (accessed: 2009 November 25, 03:59 CET)

or via direct email. There is the possibility for attaching files. [ibid.] Individual student-to-student communication is not explicitly facilitated. However, students are allowed to exchange private email addresses.

In comparison with GTP, the following can be remarked:

IEarn follows the original concept of Learning Circles developed by Margaret Riel. Activities include sending of welcome packs containing small cultural items of each classroom via post. In contrast to GTP, iEARN focuses very much on the creation and publication of a Learning Circle outcome such as a powerpoint presentation, a video or a blog. [iEARN, 2009b] In GTP, no such result is expected.

2.6.3. Global Nomad Group

The third initiative that organises projects which match the criteria defined above is the Global Nomad Group (GNG)[17]. Since 1998, GNG facilitates video conference sessions between schools on a specific topic. [Global Nomads Group, 2009] GNG uses a videoconference system by Polycom via ISDN, IP or satellite connections. The official mission is described as follows:

> "The Global Nomads Group's purpose is to foster dialogue and understanding among the world's youth. To serve as a vehicle for awareness, bridging the boundaries of cultural misconception and instilling in our audience a heightened appreciation and comprehension of the world in which we live." [ibid.]

Since the start of the project, classes from 40 countries have participated. [ibid.] GNG claims that 10 000 students participate per year.

In comparison with GTP, the following can be remarked:

GNG themes are in general political or focus on global issues. More personal themes from the students' own experiences such as the GTP's *A day in my life* are not discussed. GNG provides lesson plans and a teacher guide on using audiovisual media in education. Higgins [2001: 27] GTP provides the overall project phase structure, but teachers are expected to design their lesson independently. There is however a GTP handbook available that explains the pedagogical concept of Learning Circles and supports teachers with meeting deadlines and producing outcomes required by the project. As opposed to the GTP, the GNG projects always include direct synchronous video conference meetings. Students are also not expected to reflect discussions in writing.

[17] Cf. http://www.gng.org/ (accessed: 2009 December 7, 12:23 CET)

2.7. Conclusion

When reviewing the characteristics of the four projects as they could be found in the material analysed, the following fields of variation can be identified:

The *degree of facilitation* varies from an entirely teacher-decided project course in eTwinning to a structured phase schedule in GTP Learning Circles. In a recent survey among eTwinning participants, teachers call for more structure within the project course. [Crawley et al., 2009: 30]

When it comes to the *production of project outcomes*, the format as well as the required extent varies from no required physical or digital outcome in GNG, to having teachers decide in eTwinning, to certain textual components in GTP, to producing something that can be displayed in iEarn's Global Gallery [iEARN, 2009c].

Looking at a the *types of software* employed for exchanging contributions and messages, they range from traditional email through freely available wiki software to custom-designed, proprietary multi-functional platforms. In terms of hardware, participants in all cases need a computer with internet connection and in one case video conferencing equipment.

In general, *objectives* are only vaguely defined and only few concrete aims are stated. ETwinning aims at supporting the use of ICTs and at strengthening the solidarity withing the EU community, whereas iEarn includes cross-cultural understanding and pedagogical aims through the production of a tangible Learning Circle outcome. GNG underlines the awareness of global political and cultural issues. GTP, in contrast, encompasses multi-faceted objectives as described in chapter 2.3. There is also a difference in the *extent of community support* the project offers. GNG does not explicitly support the community of participants e.g. through an online community tool or participants database. ETwinning is based on a self-organizing community where teachers pair-up their classes through the community platform. It even offers a resources pool for participants and online workshops where teachers cooperate.

3 Theoretical concepts

3.1. Laying the Foundations: Learning theories

Instructional programs that utilize online components or are conducted entirly online place fundamentally different demands on learners and instructors. Thus, it is obvious that offline teaching methods cannot simply be applied but need to be rethought if they are to bethey are to bethey are to beapplied they are to bethey are to beto online learning settings. [Ally, 2008: 18] With more and more educational institutions supplementing traditional teaching styles and formats styles and formats styles and formats styles and formats styles and formats with online components, existing theories are being developed and discussed further, especially in the light of a generation of learners who are more familiar with computer technology at an ever-younger age. [Downes, 2005; Schulmeister, 2008; Siemens, 2005] Prensky goes so far as to suggest that the way this new generation acquires knowledge might have changed fundamentally. [Prensky, 2001] In order to make judgements about the suitability of such a component's design as it is embedded in its context, one needs to understand how human learning takes place. Pedagogical and psychological sciences have developed different approaches that describe learning processes over many decades. [as remarked by Griesbaum [2006: 59] and Ally [2008: 19]] Models of how learning and knowledge evolve in the human brain can give implications for instructional design. [Campos, 2004] However, they vary dramatically in scope and focus and cannot be used to model the entire spectrum of learning. Thus, the terminology 'learning theory', suggesting comparability, is not appropriate for each approach, since models represent merely different points of view oremphasize emphasize different aspects of learning. [Janneck, 2004b: 15] Recent discussions in learning theory literature claim that there is one theory that best describes learning and teaching in an online context. [Downes [2007] and Siemens [2006]] However, approaches to learning and teaching cannot be considered incorrect or correct per se, nor should they be viewed as competing positions, but rather should they be considered in the context of particular learning situations, their scopes, desired learning outcomes, and the characteristics of the students. [Griesbaum, 2006: 69] After discussing theories related to learning and comparing

their different aspects, it will be possible to derive implications for an appropriate instructional design within the context of the GTP.

Three main viewpoints are commonly identified in the literature surrounding teaching theory: behaviourist, cognitivist and constructivist. Again, one must rememberto be remembered is that they do not exclude eachother but they rather overlap and each presents a different approach describing how we acquire knowledge. [Ally [2008: 19]; Griesbaum [2006: 69]] Ally [2008] suggests to use the three main viewpoints as a taxonomy for learning: "Behaviorists" strategies can be used to teach the what (facts); cognitive strategies can be used to teach the how (processes and principles); and constructivist strategies can be used to teach the why (higher-level thinking that promotes personal meaning, and situatedand contextual learning)" [Ally, 2008: 20] Connectivism, a fourth and more recent viewpoint which has garnered much attention recently, will also be discussed in this paper as it provides innovative arguments for more traditional theories.

Since there are different types of knowledge,[1] instructional design of any online learning scenario must account for specific learning outcomes and draw conclusions about which aspects of different approaches might be most useful to learners. An overview gives Ally [2008].

3.1.1. Conditioning Black-Boxes: Behaviourism

Behaviourism is considered the foundation for modern psychology of learning and was established following the works of Watson, and later those of Pavlov and Skinner. Approaches that build on the behaviourist approach consider the human mind as a black box which cannot be looked into. Learning processes are a chain of reactions in the form of stimulus-response. Behaviourism denies the value of introspection for researching learning, looking instead at what overt reactions or behaviour people show following exposure to a certain stimulus. [Zimbardo & Gerrig [2004: 244], Ally [2008: 19] and Janneck [2004b: 14]] A certain stimulus will trigger a certain reaction. If this is done repeatedly, the result is a change in behaviour. Following Pavlov, this chain is then called classical conditioning. [Arnold, 2005: 2] Skinner improves on this theory with research into conditioning finding that the quality of consequences to a particular stimulus (such as reinforcement or punishment) can lead to a change in the particular response that is shown. [Zimbardo & Gerrig, 2004: 262]

Implications for Online Learning

Literature states implications foran exact definition of learning outcomes, sensible sequencing of learning content ("simple to complex, known to unknown, and knowledge to application" [Ally, 2008: 21]) and appropriate and timely feedback. The focus in behaviourism is the

[1] de Jong & Ferguson-Hessler [1996] distinguishes between situational, conceptual, procedural and strategic and makes a further classification into level, automation, modality and generality

transmission of content. [Griesbaum, 2006: 61] In an applied format, this viewpoint can be found in so-called Drill&Practice programs as early versions of computer-based training. [Janneck, 2004b: 15] Behaviourist views are not suitable for the acquisition of complex, highly contextual knowledge. [Arnold, 2005: 7]

3.1.2. Improving Memory: Cognitivism

In response to the quite radical approach of behaviourism, which purposefully excludes human introspection and self-evaluation of thoughts and attitudes from its studies, the theoretical school of cognitivism explicitly includes these points. The term cognitive revolution — denoting the new concepts scientists developed in order to describe learning — illustrates that this was a true paradigm shift indeed. [Griesbaum [2006: 61], Arnold [2005: 3]] As opposed to only looking at the visible results of mental processes, the central points in cognitivism are insights into how information is processed within the human brain as well as phenomena such as perception, memory, thinking, problem-solving strategies, etc. [ibid.]

In opposition to the idea of the stimulus-response model that denies the active role of the learner, Jean Piaget (1896-1980) developed a theory that has influenced more than cognitive points of view. In Piaget's theory of cognitive development, intellectual development occurs via constant adaptation between an individual's cognitive structures and his or her environment. These schemes are now constantly being edre-evalued as the individual interacts with his or her environment based on the consequences of the actions. Two processes are involved in adaptation: assimilation and accommodation, where assimilation means that the individual adapts what he or she finds in his or her environment to his or her cognitive structures. Contrastingly, during accommodation, one's own cognitive structures are adapted to match what is found in one's environment. The result of adaptation is a learnt set of behaviour called schemes. [Zimbardo & Gerrig [2004: 452], Griesbaum [2006: 61]]

Through a cognitivist's eyes, learning is defined as "[...] kognitive Strukturen zu entwickeln, immer wieder zu verändern und dabei Wissen aufzubauen." [Arnold, 2005: 4] It is thus an active process where the learner takes the role of actively (re-)shaping its cognitive structures rather than having them determined by external stimuli. [Griesbaum, 2006: 61] Cognitivism also believes in the concept of objectively definable knowledge with a set of rules (procedural knowledge) and facts (declarative knowledge) and underlines the possibility ofinfluencing the amount of knowledge acquired by presenting material in a way that supports mental structures of memorization. [ibid.] It can be externalised in the form of networked concept maps indicating hierarchies and semantic connections between items within a specific category. [Ally [2008: 22], Zimbardo & Gerrig [2004: 330]] Memory is defined as having different capacities (sensory, store, short-term memory, long-term memory) depending on the time and

quality of information processing. During the process of knowledge-acquisition, information passes through all stages of memory by repetition and recall. [ibid.]

Implications for Online Learning

Chunking and appropriate presentation of material: Since the capacity of memory depends on the time and quality of processing, materials should be split into appropriate and meaningful units and presented in a way that supports memorization. [Zimbardo & Gerrig, 2004: 301] Appropriate hyperlink structures within the presented content in a web-based application can easily link chunks in a meaningful way and provide "individual learning paths" [Arnold, 2005: 9]. Different characteristics of types of memories should be taken into account, e.g. sensory store capacity is most limited; thus audio material should be supplemented by more persistent visual material. Also, presentation of material should be organised in a way that accounts for the particularities of human perception and attention. Gestaltgesetze are a good guideline for presenting materials on a screen. [Zimbardo & Gerrig, 2004: 177]

Building on existing knowledge Since a learner actively builds on existing cognitive structures when acquiring new knowledge this should be taken into account; e.g. a teacher should assess students' levelslevels first or use use an online module to do the same and only then start with the appropriate content. This is intended by and implemented in intelligent tutoring systems. [Griesbaum [2006: 62]; Arnold [2005: 8]] Ally [2008] suggests activating a learner's knowledge by asking "pre-instructional questions" [Ally, 2008: 24].

Networked presentation of material Following the idea of concept maps, links and hierarchies between learning material should be highlighted. [Ally [2008: 22], Arnold [2005: 8]]

Memory access Supporting strategies for activating long-term memory should be provided to make sure repetition, recall, and contextualization have been carried out. [Ally, 2008: 26]

Account for different learning styles Since adaptation of schemes differs from person to person, different styles of perceiving and processing information result. Learners should therefore be given a choice of accessing content time and place independently by providing it in various media types in asynchronous platforms. [Ally, 2008: 28]

Provide appropriate Feedback Ally [2008] mentions the importance of both intrinsic and extrinsic motivation for learning success. [Ally, 2008: 29] Providing appropriate feedback during assessment and monitoring progress can act as motivation and aids the built up of cognitive structures such as concept maps. [Arnold, 2005: 8]

3.1.3. Contextualizing Learning: Constructivism

Constructivism combines scientific explanations from the fields of epistemology, philosophy of science, communication and learning. [Janneck, 2004b: 17] It therefore lacks an exhaustive framework or a well-defined scope. [Arnold [2005: 4], Griesbaum [2006: 63]] It has nevertheless had a considerable impact on models of learning and teaching since it includes new aspects ofof cognitive approaches, namely aspects of emotion, social context and situated cognition. [Janneck [2004b: 17], Ally [2008: 30] Griesbaum [2006: 62]] In constructivism, knowledge is not an object transferred to the learner 'as is' but is rather deeply influenced by the context and situation in which learning takes place. Learners take an active role by shaping their own learning experiences, integrating what they learn into their pre-existing knowledge. Learners are not seen as separated from their environments but as deeply embedded into "communities of practice" (cf. chapter 3.3.2) with shared goals, artefacts and rules that all shape the way learning takes place within each individual. [Janneck [2004b: 18], Arnold [2005: 5]] Constructivism is not to be confused with constructionism; a concept introduced by Papert that refers to learning as an interaction between the individual and the environment, where objects are manipulated in order to gain an an understanding of reality. [Kop & Hill, 2008: 6]

Implications for Online Learning

Situative cognition In accordance with the assumption that learning always takes place on the basis of social context and individual experiences, learning will be successful if it relies upon real-life experiences and upon characteristics of the individual's environment. Tasks and examples should therefore be taken from the learner's experiences. [Janneck [2004b: 18], Ally [2008: 31], Arnold [2005: 10]] Narrative elements and multimedia inclusion can help provide contextual cues. [Niegemann, 2004: 30] In addition, the aims of learning should be related to active problem solution instead of simply being a repetition of facts. [Ally [2008: 30],Griesbaum [2006: 64]]

Social context Learning should take place in a social context. Group-cooperation and collaborative activities support learning and allow multiple views of the same subject which may enrich individual learners. [[ibid.], Janneck [2004b: 18], Arnold [2005: 12]] This point is especially important when considering CSCL settings with groups of learners in dispersed locations. Social media tools which support web-based synchronous and asynchronous collaboration and communication processes play a particularly important role here.

Interaction Since learning should be based on learners' own experiences, online learning should offer ways for self-initiated and self-controlled learning. This can be achieved by presenting content in a way that lets learners chose individual access points and navigation. [Arnold, 2005: 8] This will result in self-constructed, interactively built knowledge which is believed to enter long-term memory and to promote higher-order learning such as applying problem solving skills to complex and abstract problems.

[Ally, 2008: 33] He furthermore points out the importance of different levels of interaction at this point — merely presenting content on a screen will not result in higher-order learning; a learner-learner or learner-instructor interaction is vital for this.

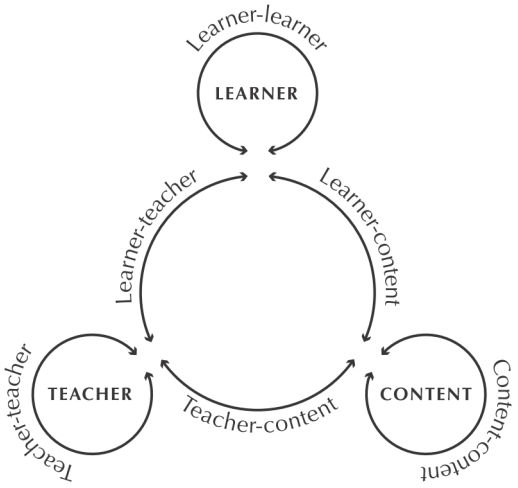

Figure 3.1.: Types of Learning Interaction. From: Ally [2008: 32]

3.1.4. Tying the Knots: Connectivism

As Ally [2008: 39] remarks: "There is a shift toward constructive learning, in which learners are given the opportunity to construct their own meaning from the information presented during the online sessions." some theorists go as far as to imply that, with no objectively definable knowledge, the role of the teacher will change from one of being the provider of objective knowledge in behaviourist approaches, to one of guidance and control in cognitive and constructivist approaches, to the extent that he will become redundant altogther„ with the learner deciding autonomously on the selection and importance of learning material and content. [Griesbaum [2006: 64], Arnold [2005: 10]] Arnold [2005] states that as a result, institutionalized learning might quickly be generally discredited and quotes Kerres [2001] who predicts, referring to situative learning theories, "das Ende des Unterrichts" (the end of teaching). [Kerres, 2001: 77] These critics express worries all apparent in an emerging learning approach that focuses on learning in "the Digital Age" [Siemens, 2005]. With the concept of connectivism, George Siemens and Stephen Downes pay tribute to technological developments within the last 20 years, which, they claim, have changed the ways we now construct knowledge, organize our industries, conduct science and also learn. [Siemens [2005], Downes [2005]] Networks are a key term and "[...] can simply be defined as connections between entities. Computer networks, power grids, and social networks all function on the simple principle that people, groups, systems, nodes, entities can be connected to create an integrated whole. Alterations within the network have ripple effects on the whole." [Siemens, 2005] Connectivism is not to be confused with the neuro-cognitive science view of

connectionism, "based in behaviourism where learning occurs as we form links between stimulus and response." [Siemens, 2006: 37] Connectionism propose s a new view of how learning takes place in the form of connecting neurons as opposed to previous computational models of information processing. [ibid.]

The call for a new teaching and learning framework (a discussion of whether or not connectivism can be seen as a new theory follows) is based on the assumption of an ever-lower "half-life of knowledge" [Siemens, 2005] due to rapid innovations in technology, (namely web-based, collaborative and communication technologies) that ignore cultural and national borders. [[ibid.], Siemens [2006: 32], Kop & Hill [2008: 9]] With more and more sources of knowledge available in a shorter time, meta-skills such as judging the importance of information presented in a specific context and the formation of mental representations of knowledge in the form patterns of nodes and links become important. The main task of the learner is to make sense of and identify patterns of connections within the unsorted or even chaotic learning material he is presented with. [Siemens [2005], Downes [2006]]

Central to connectivism is the idea of interlinking items, be it groups of people or knowledge artefacts in a specific field where no single item Exists without connections to neighbouring ones. In the eyes of connectivists, identifying these connections is crucial to understanding and learning. In connectivism, learners never learn in isolation but in learning communities which can be defined as "[. . .] clustering a"clustering of similar areas of interest that allows for interaction, sharing, dialoguing, and thinking together." [Siemens, 2003] As defined by Downes [2006] "[. . .]human thought amounts to patterns of interactions in neural networks." Connectivism therefore combines concepts from the neuro-sciences with those of pedagogy and relates them to recent developments in technology.

The terms knowledge and learning are used inconsistently throughout the explanation of connectivism by both Downes and Siemens. Knowledge is seen as non-propositional, meaning that there is no objectively definable knowledge which can be transmitted. Knowledge is not linear but distributed internally (neuronal networks) as well as externally (e.g. social networks) and describes a particular state of connections, which can be weaker or stronger. It is always related to a particular context and is therefore constantly growing and being re-adjusted. [Siemens, 2005] He also states that "Knowledge is simply to be in a certain state of connectedness. [. . .] All knowledge resides in connections." [Siemens, 2008: slide 5, 3:50] There is also no generally agreed-upon definition of learning: "Learning is a process of connecting specialized nodes or information sources." [Downes, 2006] "Learning [. . .] is the ability to create and form those networks." [Siemens, 2008: slide 6, 4:29] "Learning is the act of recognizing patterns shaped by complex networks." [Siemens, 2006] With inconsistent definitions and even contradictions. (learning as the act of making connections vs. recognizing patterns of existing connections) it becomes clear that the entire concept of connectivism needs further research.

When searching for research conducted on connectivism, only a limited number of publications can be found. Next to a number of articles published by the founders of the concept, Stephen Downes and George Siemens, only entries in so-called edu-blogs and a number of wiki entries will be found, many of which are the result of discussions during two MOOs (Massive Open Online Course) held by Downes and Stephens on connectivism in the fall of 2008 and 2009. e.g. blogs discussing developments in education; [2] [3] Papers published in scientific journals are rare. (compare references above). There has been no empirical research undertaken in order to prove connectivist postulations. Kop & Hill [2008: 7] How can it then be justified to accept connectivism on the same level asestablished learning theories as described above? This will be explained in the following paragraphs.

Siemens himself calls his concept a 'theory' from the very beginning, and even argues that it should continue to be regarded as an 'emerging theory' when criticized by Verhagen [Siemens [2006: 25], Verhagen [2006]]. However, Siemens does not give sound reasoning for why connectivism shold be called a theory and only concludes with a repetition of the need for an alternative [ibid.: 39] as a result of "emerging trends" and by avoiding to respond Verhagen's criticism stating "Whether connectivism plays this role (that of an alternative learning theory) is irrelevant." [ibid.]

Later on, Kop & Hill [2008] pose the same question, drawing on three frameworks that, in her eyes, already sufficiently explain aspects highlighted by connectivism: Papert's concept of constructionism, Clark's theory of embodied cognition and Wenger's community of practice. Kop & Hill [2008: 6] Constructionism as a framework for artificial intelligence was outlined in Kerr [2007]; Clark's theory of embodied cognition "[...]combines multiple theoretical frameworks (e.g., connectionist, cognitivist) to explain cognition." [Kop & Hill, 2008: 6], and Wenger's community of practice claims itself to be a "social theory of learning" [Wenger, 1998: 4] with a focus on "[...]learning as social participation." [ibid.][4]. Thus, the notion of social interaction and communication, which will inevitably result in the formation of networks, is already present here. They come to the conclusion that "[...] a new epistemology may be emerging." [Kop & Hill, 2008: 11] but that connectivism cannot be "[...] treated as a separate learning theory in and of its own right." Nevertheless, they agree that there is a "paradigm shift" and that connectivism might provide a "new epistemology" [ibid.]. Also Kop&Hill and Verhagen consent that connectivist research will have an impact on pedagogy on a curricular level. [[ibid.]; Verhagen [2006: 1]]

The author of this paper therefore assumes that connectivism does not give new definition of cognitive processes taking place within the brain during learning, nor does it yet provide a fully established and reviewed framework of terminology and concepts. It still provides implications of how the roles of teacher and learners might change considering the

[2] E.g. http://www.teachandlearn.ca/blog/2005/09/14/connectivism/ (accessed: 2009 December 7, 13:45 CET); http://www.elearning2null.de/2007/03/17/vierter-video-podcast-konnektivismus-pur-lernen-ueberdenken/ (accessed: 2009 December 7, 13:50 CET)

[3] Cf. http://ltc.umanitoba.ca/connectivism/ (accessed: 2009 December 7, 13:23 CET)

[4] This concept will be outlined further in chapter 3.3.2

impact of emerging technologies on communication, collaboration and, by extension, on learning.

Implications for Online Learning

It has been argued and identified that connectivism contributes to some extent to the question of how learning- especially in an online setting which focuses on the formation of links between groups of learners, such as that of the GTP. Implications derived from this concept are discussed below.

Autonomous, self-initiated Learning For connectivist learning to take place, learners need to be left to explore and research content on their own. [Ally [2008: 34], Siemens [2003]] This does not mean that there should be no guidance from an instructor. Kop 2008 underlines the necessity for "critical engagement by a tutor". [Kop & Hill, 2008: 10] Bernhardt [2007] developed his "Modell des selbstgesteuert-konnektiven Lernens mit PLE" (model of self-controlled learning with personal learning environments) where he states that learners' motives to engage in learning with a particular (online) tool may differ. Ally also describes the process of connectivist learning as one of autonomous exploring and researching. [Ally, 2008: 34] The use of web-based tools can help learners to follow individual learning paths. This will allow the system to take into account different levels of understanding and varied learning styles. Online learning provides appropriate methods for autonomous learning with low transaction costs for learners and teachers. This characteristic follows the views of cognitivistic learning and it has already been outlined in the respective section how online learning methods can support this. [Arnold [2005: 12], cf. chapter 3.1.2].

Multi-disciplinary Learning across Networks Downes [2006] states that "[...]learning from a large number of disciplines is required." This is best achieved if content is explored autonomously without limitations to a specific subject or even to a specific learning institution. [ibid.] Learning by interacting in networks supports this, as stimuli received through elements in this network are likely to come from different disciplines. Collaborative web-based tools can support the creation and maintenance of external networks (both, people and knowledge networks) e.g. by helping learners maintain a network of co-learners, and can also support the externalization of internal knowledge, e.g. by locating knowledge on a network such as the Internet. If research and the evolution of knowledge stay withina a limited scope, the small-world network phenomenon restricts the amount of innovation that can take place. [Shirky, 2008: 215][5] Applied to an individual's mental knowledge map, this means that concepts that are mentally linked with many others are more likely to be remembered. "In a learning sense, the likelihood that a concept of learning will be linked depends on how well it is

[5] In a small-world network, distance between any two nodes is kept short as a few hubs serve as routers. This form of network is found to be relatively robust, which makes sense in any biological setting where spontaneous mutation is controlled in much the same manner. [Milgram, 1967] In an educational context, however, small-world networks are innovation-unfriendly.

currently linked." [Siemens, 2003] In psychology, this effect is known as the the levels-of-processing effect. [Zimbardo & Gerrig, 2004: 315] This theory states that the more semantic mental elaboration was involved during encoding knowledge, including association to diverse concepts, the better the recall result. Additionally, since computer networks are easily established globally, cross-cultural exchange between learners can foster outcomes that are rich in innovation and influenced by diverse viewpoints.

Learning focuses on Pattern Making instead of repeating and recalling Content Siemens [2008] claims the outcome of a course should help students "make sense" of content presented in varying contexts. This can be achieved by offering content in different media formats, such as synchronous and asynchronous communication formats; providing possibilities for establishing cognitive presence, e.g. in a virtual reality environment (cf. chapter 3.4), and for accessing content also after a course is finished. Downes stresses the need for keeping in mind change management, i.e. recognizing innovations and changess that constantly occur during the delivery of a course as well as social and contextual factors within a group of learners. [ibid.]

Since knowledge, in connectivist's eyes, is distributed, content should also be drawn from different sources which helps to identify and recognise patterns within a field. Siemens also asks, "What is the impact of chaos as a complex pattern recognition process on learning?" [Siemens, 2003] Here, he refers to the connectivist argument of distributed knowledge, where it is the learner that creates meaning by identifying patterns in a seemingly unstructured chaos. With distributed knowledge, the ability of *knowing where* becomes more important than *knowing what*. [ibid.] As a result, learning that uses web-based technology supports recognition of patterns e.g. by making connections between data explicit through hyperlinks, or technologies of information visualization such as tree maps. [Fekete & Plaisant, 2002]

Role of the Instructor Kop & Hill [2008] point to the tendency of groups to stay within links they have established with neighbouring nodes (i.e. contacts) of their networks, which tend to be like-minded people. Kop & Hill [2008: 10] The role of the instructor should thus be "[...]to make people aware of alternative points of view." [ibid.] As a result of the social nature of constructivist learning (learning is only possible within networks of people), social interaction is not only not only necessary, it is a basic requirement for learning to take place. This interaction can take place, as suggested in Ally [2008: 37], between different groups, with learner-learner interaction being just as important as learner-teacher interaction. [Siemens, 2003]. According to Siemens, instructors should "[...]play a facilitative, rather than instructive role." [ibid.] Downes goes as far as to state that the goal should be "[...]the removal of the intermediate teacher that stands between knowledge and the student." [Downes, 2006] Thereby, he grants more value to content that is experienced by the student directly — and acknowledged as such — as opposed to content presented by teachers.

3.1.5. Applying Connectivism to the Global Teenager Project

The author of this thesis argues that connectivism, in addition to traditional learning theories, provides valuable complementary aspects of how learning should ideally take place in a networked group of learners. Therefore, this section is dedicated to relating connectivist learning implications laid out in the previous section of this chapter to the context of the Global Teenager Project. This requires taking into account GTP's specific intercultural setting, teacher facilitated communication (cf. chapter 4.3) and group-based learning (cf. chapter 2.5).

It has been described above that connectivist learning ideally has a multi-disciplinary component. This is true for GTP, as questions from different schools (though on one topic) vary since they will reflect cultural backgrounds of each of the sponsoring classes. [Riel et al., 2008: 21]

Connectivism calls for autonomous learning where content is not provided by experts in advance but identified and explored by students during the learning process. Therefore, the role of teachers is mainly that of a facilitator on a par with students. One is of course allowed to challenge facilitators and discuss findings. The way GTP learning circles are conducted, this autonomous learning is very much supported. Students decide — after discussion within their own class — which question to ask the other participants. During the research phase, depending on the age and capabilities of the students, teachers act as facilitators and are encouraged to leave as many decisions as possible to students, remaining ready and available in case problems should arise. "Involving the students in the planning phase gives them a sense of ownership that often results in higher motivation." [Riel et al., 2008: 18] Also in the research phase, a student's initiative is highly stressed, as answers will be their product. As an outcome of this, students will have developed learning skills such as researching knowledge sources and collaboratively formulating texts. As Riel describes networked, connectivist learning in Learning Circles:

> "Memorizing concepts and definitions is increasingly being replaced by understanding actions, reactions and interpretations and explaining them to others. Teaching is shifting from controlling the transmission of information to providing intellectual leadership in challenging conversations among a community of learners. In these current formulations, education is creating a shared way of thinking about one's self, the community and the world. [...] Technology extends the range and diversity of available experiences in this social-constructivist framework. Network learning provides a forum for intellectual development of both students and teachers." [Riel, 1995: 219]

These meta-cognitive skills (e.g. higher-order, reflective thinking, information literacy) are becoming more and more important, but students or teachers cannot be expected to develop them automatically. Schmidt therefore remarks that for successful online learning,

the abilities of students "[...]to successfully reflect, control or organise their own learning activities." are important. [Schmidt & Werner, 2007: 72]

It should be noted at this point that in literature, different types of aims in a learning scenario are discussed: higher-order learning vs. acquiring social skills vs. intake of content. Higher-order learning has been discussed extensively among educational researchers, especially in the context of computer-mediated, text-based communication. [Campos, 2004] A further discussion of this interface between pedagogy, communication sciences, and computer supported cooperative learning is adressed in chapter 3.3.

The question now is whether or not students who grow up with the Internet and multimedia applications are different than previous generations posessing a particular media literacy and meta-cognitive skills at a much earlier stage, and should therefore be taught differently. This is also the question put forward by Schulmeister [2008], who analysed nine publications arguing in favour of such a net-generation or similar concepts. Additionally, he compared 45 empirical studies on the use of media and internet literacy. He comes to the conclusion that the age group in question is indeed making use of media and the Internet more frequently than their predecessors. Nonetheless, looking at the reasons for this increased use, motivation is based on well-known children and teenager activities, such as engaging with peers and maintaining friendships. [Schulmeister, 2008: 92] Media used to extend and enrich real-life social activities merely exist as a means to an end. Yet the transfer to educational settings is not as natural and seamless as hoped. [ibid.: 93] Here, the encouragement of explorative use of media in early years of schooling might support such integration.

Therefore, it is claimed at this point that, in order to successfully harvest the added value of autonomous, self-initiated, connectivist learning, certain meta-learning skills need to be acquired. This is possible, just as techniques for memorizing knowledge can be learned. [Zimbardo & Gerrig, 2004: 316] This view goes along with Castells, who argued in 2003 - before the term Connectivism was coined — that it is of crucial importance to develop "[...]the intellectual capacity of learning to learn throughout one's whole life, retrieving the information that is digitally stored, recombining it, and using it to produce knowledge for whatever purpose we want." [Castells, 2003: 278] Consequently, as has been shown above, the design of GTP Learning Circles provides an appropriate frame for developing such skills. There is an even balance between tightly-structured and autonomous learning phases as well as between interactive and independent learning phases. The positive effects of this balance are supported by Ally [2008], who also mentions these diverse aspects as crucial in his components of effective online learning, underlining the importance of interaction [Ally, 2008: 3] (cf. chapter 3.1.3)

3.2. Communication Theories

3.2.1. Foundations in Communication Studies and Applied Linguistics

The term *communication* plays a central role throughout this thesis. For the purpose of this study, communication refers to the exchange of written messages and also includes those delivered in an externally structured environment where completing a pre-defined project outcome might be the motivation.[6] The specific GTP context is characterized by communication taking place between groups, across cultures, and indirectly in an online setting. (cf. chapter 2.5) Communication artefacts commonly produced during a Learning Circle are of written nature and stored in digital formats, which makes it possible to analyze communication asynchronously even after it has taken place and from a different geographical location. It will be argued that communication within GTP can be improved. (cf. chapter 4.3.3) For this, it is useful to adhere to some commonly quoted theories from the fields of communication studies and applied linguistics.

Traditional Communication Theories

As there are many communication theories, it would go well beyond the scope of this thesis to cover them all. A selection of the most influential theories are presented at this point with regard to the characteristics of the GTP (cf. chapter 2.3) Stahl & Carell [2004] list a comprehensive grouping of communication theories identifying nine main categories. [Stahl & Carell, 2004: 229]

One of the most commonly quoted communication theories in the context of computer-mediated communication is that by Claude Shannon and Warren Weaver which they developed in 1948. 3.2 illustrates this model.

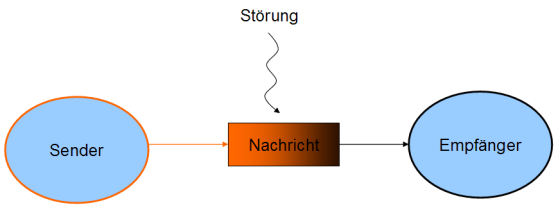

Figure 3.2.: Shannon and Weaver's communication model, adapted from Janneck [2004b: 21]

In this mathematical model of communication, a message is encoded and sent by a sender and consequently received by the receiver who on his side needs to decode the message. In order to achieve bilateral understanding, a common set of symbols and meanings is required. Throughout its way, the message is subject to a number of interferences or noise

[6] Most research in this field is based on intrinsically, as opposed to externally motivated message exchange

which influence its quality. [ibid.] Since communication is clearly determined by a number of factors, this simplistic model falls short of describing this complex process. In an extended version, a top-down approach is added which states that messages are not wrapped in a package and sent and received unchanged, but meaning from these messages is constructed by the receiver in a process of interpretation based on values, experience and expectations. Here, communication is seen as an interaction between two or more people that are each tied to their social and situative backgrounds. [ibid.]

Adding the notion of situation and social interaction, focus will shift to one sub-field of linguistics, pragmatics. Pragmatics deals with language as a means of communicative action in relation to the people involved and the situational context. [Adamzik, 2004: 328] The field of pragmatics investigates the direct effects of a speech act[7] made by a sender on his/her environment. A concept of this field which has been adopted in the context of CSCL in particular is the Four Sides Model by Schulz von Thun, mainly discussed in German-language literature. It is also based on constructivist views. This theory examines the functions of a message as a result of the construction process carried out by the receiver. It builds on Bühler's Organon Model combined with Watzlawick's postulates. [Adamzik [2004: 34], Janneck [2004b: 22]] According to Schulz von Thun, each message is made up of four dimensions, commonly represented as the four sides of a square. The four sides are: Sachinhalt[8] (factual information); Selbstoffenbarung (self revelation), Beziehung (interpersonal relationship indicator), Appell (appeal). [Janneck, 2004b: 22] As an implication, a message will always be perceived on the basis of how the receiver interprets each of these four dimensions. Thereby a distinction is made between the sender's intention and the receiver's subjective perception. This model provides a basis for identifying sources of misunderstanding in human communication. If the sender's intention and the receiver's perception on one or more of the dimensions differ in degree and quality, divergences are bound to occur. In order to reach mutual understanding, it is therefore vital for interlocutors to strive for inferring eachother's intentions. [ibid.]

Moving to Intercultural Communication

It is beyond of the scope of this thesis to exhaustively discuss the multi-faceted definitions of the term culture.[9] It is emphasized however, that culture is considered a dynamic, neutral and collective phenomenon, which can only be explained by comparing and differentiating social groups of people. [Steigenberger, 2009: 116] Whenever it is used throughout this thesis, the term culture refers to the perceived relative homogeneity of a particular

[7] According to Adamzik [2004], the founders of the speech act theory, Austin and Searle, do not only refere to oral but also to written expressions. It is therefore assumed that this theory is relevant also for the context of written computer-mediated communication discussed here.

[8] The dimensions are stated in German since the model was originally developed in German language.

[9] The German-speaking reader is refered to Steigenberger [2009] who provides a broad literature review and critically investigates the various concepts behind culture adopted by scholars especially in the field of intercultural communication.

group of people in terms of a shared value system wich is passed on and learnt throughout adolescence, providing a set of guidelines for thinking, acting and feeling. [ibid.] It is important to note that this definition alllows moving away from equating culture with the inhabitants of a politically or geographically defined region (a 'civilisation'); an approach that has had been followed for many years especially in anthropology. [[ibid.: 110, Gibbs [2009: 90]]

Linguistic research on communication across cultures as well as translation studies has produced theories that range from Sapir and Whorf's assumption of linguistic determination, which claims that languages sets the limit to what we can think, to the identification of language universals by Chomsky. Koller [2001: 171-181] Also Yule [2006] remarks: "It makes a lot of sense to emphasize the fact that linguistic variation is tied very much to the existence of different cultures." [Yule, 2006: 195] Therefore, especially in an intercultural communication setting such as that of GTP, it is most important for participants to be aware of the different dimensions that might be hidden in one speech act. Sperber and Wilson claim that "If some fact is known to all members of a community, two people who think they recognise each other as members of that community have grounds for assuming mutual knowledge of that fact." [Sperber & Wilson, 1986: 19] This concept goes along with that of Common Ground where a common background knowledge is the basis for mutual understanding and further collaborative evolution of the same. [Griesbaum, 2006: 87] It is these inferences on the basis of which the receiver constructs meaning of the message. [Moeschler, 2007: 81]

Yet, when sender and receiver are members of different cultural communities with at least one of them not using their native language, grounds for this anticipation towards eachother are not as obvious anymore. Matoba & Scheible [2007] describe the concept of reciprocity which refers to interlocutors' willingness for cooperation to infer each other's intentions and to anticipate the same of the partner. [Matoba & Scheible, 2007: 6] For an all-encompassing definition of communication, Döring (2003) underlines the importance of person-to-person interaction involving a social construction of reality as opposed to a mere transmission of messages. [Döring, 2003: 39] With chances for a common knowledge basis decreasing in an intercultural situation, this is especially important for communication settings where different cultures are involved. Being sociolinguistically and culturally (self-)aware, and being able to perform a reference shift are mentioned as important components of intercultural competence by Deardorff [2006: 196].

The processes of encoding and decoding are then influenced by an additional amount of factors such as culture-specific values and norms as well as mother-tongue specific formulations. [Gudykunst [2003: 44], Kecskés [2007: 192]] Gudykunst and Kim name the dimensions of cultural, sociocultural and psychocultural influences which all act as filters but also as valuable psychological guidelines during the processes of producing and interpreting a message in an intercultural setting. [Gudykunst & Kim, 2002: 47] Cultural influences can be categorized into cultural variability dimensions, such as communication dominated by high- or

low-context, and will, to some extent, help identify communication styles. [ibid.] Sociocultural influences on communication are derived from an interlocuter's perceived membership to a particular social group which in turn each defines expectations and rules on communication standards within that group. Psychocultural influences are related to "personal ordering processes", more specifically a person's own stereotypes and attitudes used in every communication for orientation. [ibid.] As can be reasoned from these considerations, communication with any person from a different cultural or social group or any unfamiliar person is subject to possible misunderstandings. Gudykunst&Kim therefore propose the concept of "communicating with strangers", which includes all of the above contexts as the basis of their writings. [Gudykunst & Kim, 2002]

Moving to computer-mediated Communication

This section addresses implications for characterizing communication in the context of computer supported cooperative learning that are relevant for this study. Here, communication takes place group-to-group using so-called tertiary media (media that require technical devices for producing as well as for receiving a message) [Döring, 2003: 40]. The focus for this study lies in reciprocal web-based communication with the possibility for communicative interaction, which excludes exclusively one-directional broadcasting media (e.g. television). [Strijbos, Martens, & Jochems, 2004: 407]

Dependency on a technical device on both sides, as stated in the above definition, results in the lack of co-presence in a communication situation, meaning that its nature and quality is affected. In face-to-face situations, social relations between interlocutors involving the exchange of messages via all human senses are created. [ibid.] This is reduced to the potentials of the communication medium used; although it should be noted that the difference is not caused by a mere reduction or substitution of communication channels. [Griesbaum, 2006: 35]

When examining the significance of the four-sides-model (cf chapter 3.2.1) for computer mediated communication (cf. chapter 3.2.1), Janneck [2004b] remarks that, especially in CSCL communication, the factual dimension plays a dominant role. [Janneck, 2004b: 24] This can have a positive affect if a stronger focus on tasks and outcomes is desired. [Griesbaum, 2006: 88] Especially in intercultural communication contexts, this effect might be considered negative by some cultures. Hall identifies the dimensions of high- and low-context cultures that differ in the use of "explicit code". [Hall, 1973: 69] Therefore, due to the absence of informal face-to-face meetings, e.g. during breaks, the sides of self revelation and interpersonal relation need to be compensated for. To avoid objectification and over-stressing of the factual dimension of speech acts, especially in a group cooperation setting, there should be made room for developing the relationship and self revelation sides. This can be done by raising awareness among instructors to provide time and space and to place enough emphasise on these two dimensions. Additionally, the software used for communication should

provide for development of interpersonal relationships and individual self-revelation. [ibid.] According to Döring [2003], interlocutors find ways of supporting non-verbal communication (which provide means for realizing self-revelation and relationship dimension) even in textual environments by means of decorating texts (colours, formatting) or virtual acting (virtuelles Handlen) using emoticons or self-referencing phrases in third person ("yawns"). [Döring, 2003: 43] However, as underlined above, these methods again require mutually understood systems of symbols by all interlocutors and can lead to misunderstandings if one side falsely assumes understanding. For example, the use of a winking smiley icon to indicate irony might not be understood by an interlocutor with a different cultural background. As Sperber and Wilson point out, irony comprehension between members of the same culture already requires a higher level of cognition than necessary for e.g. metaphor recognition. [Sperber & Wilson, 1986: 61] This type of linguistic nuance might cause misunderstandings or at least confusion between culturally different interlocutors. [St.Amant, 2002]

Group-to-group communication again shows distinctive characteristics. Among groups, communication does no longer flow between two people, but rather in structures that can be described as networks. Network communication structures evolve within one group according to the distribution of roles amongst members. Some structures are more centralized, others more circular. As a result, some people within one group might be in a more central position, giving them more influence on the flow of communication and a higher degree of perceived status than others. [Janneck & Janneck [2004: 43], Strijbos et al. [2004: 406]] The concepts of centrality and density within a communication network can be made explicit by using Social Network Analysis (SNA) methodology which helps visually quantifying contributions e.g. in an online forum in relation to contributors. Density refers "[. . .] to the extent to which students respond to eachother." [ibid.]

Janneck & Janneck [2004] name three implications for CSCL group-to-group communication settings which should be considered:

Equality in participation Highly centralized group communication networks might result in a decrease in students' motivation. Therefore, it should be ensured that all participants have equal chances for contributing individually.

Equality in status Inequality concerning status and influence amongst students can be avoided by ensuring a flexible definition of roles and an independent choice of communication channels

Support interpersonal relationship building Supporting interaction on a personal level can help compensate for fewer opportunities for interpersonal contact due to the lack of face-to-face meetings Janneck & Janneck [2004: 44]

With an emphasis on interpersonal relationship building, these considerations go in line with implications that can be derived from the Four Sides Model.

It has been mentioned that time plays an important role in intercultural communication. Gudykunst & Kim [2002] quote studies that have shown that turn taking differs across cultures. [Gudykunst & Kim, 2002: 227] Hall [1973] underlines the difference in dealing with and perceiving time and contrasts monochrome and polychrone cultures. Döring [2003] mentions chronemics as a point of particular interest during online communication and states that in synchronous communication, for example, prompt answering can be associated with attention. [Döring, 2003: 43] Also St.Amant [2002] notes that the use of silence during communication across cultures differs which leads to possible misunderstandings if frequent posting e.g. in a synchronous chat communication is perceived as aggressive by cultures with a higher tolerance of silence. [St.Amant, 2002: 206] Silence and time-handling are only two examples of cross-cultural variations to be noticed during communication. The scientific field of intercultural communication is constantly investigating cross-cultural variations and effective ways of dealing with them (intercultural competence). [Gudykunst & Kim, 2002: 269].

Moving to Communication within the Global Teenager Project

Summarizing the points laid out above, implications for successful communication in the intercultural, web-based group context of GTP can now be drawn.

As outlined above, group structure is dynamically affected during group communication. The allocation of roles to students involving different levels of responsibility and thus, power, should be carefully considered. If the communication network within the group becomes too centralized, few students will feel involved and motivated. In GTP, the arrangement of within-group communication is left up to teachers who are likely to know their classes. There is no fixed guideline as to how to divide responsibilities among students. This allows for flexible, culture-specific design of intra-group work. However, teachers should be made aware of and consider group dynamics also with respect to limited infrastructure. As Janneck & Janneck [2004] propose, all students should be given the chance to contribute equally to the online communication or access ICTs, something that is often not easily available in students' homes but can be a greatly motivating factor. A concept which addresses the issue of self-motivated participation in a group of learners is that of Community of Practice. A more detailed presentation of this concept developed by Lave and Wenger and described by Lindstaedt & Farmer [2004], can be found in chapter 3.3.2.

Several studies have underlined the importance of establishing interpersonal relationship for successful communication. This is especially valid in an intercultural online setting, where normally used non-verbal and verbal markers for interpersonal relation cannot be applied and where communication partners are 'strangers' (in the proper sense of Gudykunst & Kim [2002]). In GTP, this is already successfully addressed and well integrated into its structure. Classes send personal welcome and good-bye letters as part of the prescribed phases and are encouraged to upload a class picture. Additionally, contributions can be personalized by

changing font style and colour formatting of the text. The wiki workspace used currently offers various ways of formatting through a wysiwyg-editor (what you see is what you get) as well as a full HTML editing option. Depending on the type of locally installed or web-based email client used by both sender and receiver, this is also possible for email-based Learning Circles. Presently, all participating classes are given a yahoo.com email address. If yahoo!mail[10] is used online, what-you-see-is-what-you-get-editing is also possible. If a locally installed email client is used (e.g. Mozilla Thunderbird) HTML formatting might have to be enabled for sending and receiving formatted email messages.

With respect to intercultural differences affecting online group communication, it should be noticed that it is precisely the aim of GTP to "Promote intercultural and regional understanding and sensitivity" [Riel et al., 2008: 6] among participants. In literature, the term "intercultural sensitivity" (often used as a synonym of "intercultural awareness") is commonly referred to as "the way individuals experience cultural differences" and presents a precondition for intercultural competence, which is associated with the possession of certain abilities for effective communication and interaction. [Deardorff [2006: 42], Fantini [2000: 27]] Although students are meant to gain intercultural sensitivity by active participation in GTP, teachers should be encouraged to point out possible situations of misunderstandings and confusion to students in advance or be prepared to give advice to students once a similar situation occurs. Should a teacher not be interculturally experienced him/herself, appropriate training material should be provided by GTP organizers. In the current version of the Teacher's Guide, which is handed out to all teachers, there is no explicit section addressing this issue. The author therefore assumes that teachers might find some guidance on this issue or a collection of links to resources helpful in dealing with challenges presented by intercultural communication.

3.2.2. Media ommunication Theories : the Internet as a Means of Mass Communication?

This study makes use of the presumption of the generally accepted view of the Internet as an important tool for achieving educational goals in the fields of (intercultural) communication and collaboration. The following paragraphs investigate some socio-cultural theories on the nature of this tool and aspects of its evaluation.

Contrary to Castells' view who claims that "[...] the Internet is asserting its specificity as a communication medium." [Castells, 2003: 199], the author of this thesis follows the definition of Döring [2003] who argues that the Internet is not regarded as a separate medium but as an information and telecommunication infrastructure. [Döring, 2003: 43] Instead, internet-based services and applications, such as e-mail or chat software, are considered to show characteristics of separate media. [[ibid.], December [1996]] The Internet is therefore best characterized as "hybrid medium" with services combining elements of individual and group

[10] http:\www.mail.yahoo.com (accessed: 2009 December 23, 01:37 CET)

communication (email or mailinglist) as well as mass communication (Wikipedia, Youtube, flickr).

The views on the nature of the Internet's impact on society range from negative to enthusiastic. Löffelholz & Altmeppen [1994] for example, describe colourfully the risks of new ICTs for the information society such as, among others, dependency on technology in all aspects of life, selectiveness of information use, or uneven distribution of knowledge. [Löffelholz & Altmeppen, 1994: 587] Since the two authors have written their book contribution in 1994, the issue of selectiveness might have been improved with the democratization of the content production on the internet and the development of "internet cultures" such as the Hacker culture or the Open Source movement. [Castells, 2003: 36] Others, such as uneven distribution, are still widely discussed and nowhere near to being resolved. [ibid.: 207] Still others have become more serious such as the distribution of offensive and illegal content on the Internet. [ibid.: 196] Enthusiastic supporters of the internet include active members of the so-called network-society [ibid.: 116] or cyber-society, who claim that the advance of Internet technology, especially wireless and ubiquitous technologies might help in extending and enriching real-life social structures; e.g. through supporting real-life social interaction [ibid.: 121] or through increasing political participation. [Döring, 2003: 550]

There is no unanimous and broadly-accepted evaluation of the Internet's impact. Döring [2003] identifies seven groups that share a common view on this issue: politics, cultural critics of the internet, the "net society" (Netzgemeinde), internet critics (Netzkritiker), proponents of the Internet economy (Internetwirtschaft), journalists and scientists. [Döring, 2003: 30] Depending on interests, they each emphasise different (dis-)advantages of the Internet.

For the context of GTP, it is noted at this point that the project provides a strong enough institutional and organisational frame in order for students to make use of the Internet in a safe manner that allows them to exploit advantages (access to a great amounts of data for research on their Learning Circle theme, fast and free-of-charge communication across vast geographic distances), at the same time guarding them from potentially harmful aspects (molesters found in open chat rooms etc). By providing students with an institutional frame for a guided and critical experimenting and working with the Internet, students' media literacy can be increased. Schulmeister [2008] defines media literacy as the "[...] ability to access, understand and create communications in a variety of contexts [...]" [Schulmeister, 2008: 83] It is therefore argued that the advantages of the Internet outweigh its disadvantages and its use has a positive, if not essential significance for the GTP.

3.3. Computer Supported Cooperative Learning

The field of research which provides the most valuable frameworks for analysing communication in a web-based, group learning setting such as that of the Global Teenager Project is

that of Computer Supported Cooperative Learning (CSCL). After an overview of definitions and terms, the most important components, dimensions, as well as types of tools commonly described in CSCL literature are identified. Here, the emphasis is placed on research focussing on characteristics of online, intercultural group learning scenarios. Finally, their implications for the Global Teenager Project are considered.

3.3.1. Classifying CSCL - a mathematical Approach

In the context of online learning and communication, a number of concepts and abbreviations are often used inconsistently and with varying, partly overlapping meanings. [Griesbaum, 2006: 77] In order to correctly locate the field of CSCL and differentiate it from closely-related fields of research, its constitutive components and characteristics are laid out in the following section. The entire concept's meaning can best be determined by successively resolving parts of its multi-layered abbreviation.

C+S=Computer Supported

The first and second letter, C and S, stand for *Computer and Supported*. This characterizes the means of teaching and learning employed. Here, the nature of learner interaction and communication can take different forms. The scope can vary from lessons requiring co-presence of learners where computer technology is used to enhance face-to-face situations (e.g. for compiling results in a digital format that are accessible to all afterwards) to purely virtual settings where all communication takes place via a computer network. [Griesbaum, 2006: 80]

For communication carried out by means of networked computer technology, implying that sender and receiver both require a computer in order to participate, scholars have coined the term *computer mediated communication* (CMC). [ibid.: 35] The author of this thesis argues that in purely virtual learning scenarios, the terms 'mediated' and 'supported' can be used interchangeably since, in the context of CSCL, computer technology should not be used for communication merely out of the lack of an alternative or with the intention of applying 'modern' teaching methods without any good reasons, but instead because it provides enriching extensions to face-to-face communication or because advantages outweigh possible disadvantages. Group interaction in CSCL takes place through (i.e. in a networked way), not only at computers (i.e. interaction of individuals with a software interface). [Strijbos et al., 2004: 416] Given this positive interpretation of the mediating function of computer technology, it is justified to argue that due to the *computer-supported* part of CSCL, deductions derived from CMC literature can be applied to CSCL as well.

Characteristics of CMC have been partly described in chapter 3.2.1, and will be outlined further in a later part of this chapter (3.3.4). Typical dimensions commonly discussed are

time dependency (synchronous, such as chat vs. asynchronous, such as email communication), place dependency (co-presence settings where participants interact at least partly face-to-face vs. dislocated settings where participants interact from geographically different locations) and type of lateral communication (1:1 vs 1:N). [Schümmerer & Haake, 2004: 66] In practice, these dimensions can vary anywhere in between the extreme expressions described.

C+S+L=Computer Supported Learning

After having determined computer-mediated communication as a constitutive component of the CSCL construct, taking the first, second and last letter of the abbreviation (=Computer Supported Learning), shifts the focus from communication to learning, again, supported by computer technology. Computer Supported Learning, often referred to as e-learning[11] integrates aspects of computer technology and learning, including the elements of

- Using technology for interactions with content, other learners and instructors;
- Distance: at least some of the learning interaction happens in distributed places;
- Instruction: facilitation is provided for part or all of the learning process by either an instructor or through didactic elements of the software used. [Ally, 2008: 16]

When talking about implications of CSCL theories for the Global Teenager Project, the term online learning seems to be most appropriate as it underlines the vital role of the Internet without which Learning Circle group communication would not be possible. A more elaborated discussion on learning in an online context has been led earlier (cf. chapter 3.1).

C+L=Cooperative Learning

In order to approximate the concept of CSCL in its comprehensive meaning, the last two letters of the abbreviation are examined next: C and L, leading to the term Cooperative (or Collaborative) Learning. There is no unanimous meaning as to whether C stands for cooperative [Zottmann, Dillenbourg, & Fischer, 2007] or collaborative [Pilkington [2001] or Snyder [2005]] or whether this distinction is fuzzy and hard to apply consistently in practice, so that by some authors, both are accepted as long as they denote learning taking place on a team level with interaction being one of the key elements. [Ally [2008], Griesbaum [2006], Gibbs [2009] and Anderson [2008]] Griesbaum [2006: 77] suggests a model that distinguishes between the two processes. Collaboration here is a learning process where learners share a common goal by combining their capacities, work input and knowledge towards a common

[11] Other terms used to describe the same or similar concept include Internet learning, distributed learning, networked learning, tele-learning, virtual learning, computer-assisted learning, web-based learning, and distance learning, cf. Ally [2008: 16]

learning outcome, such as the development of a shared knowledge resource (e.g. a Wiki). Work towards this outcome is done independently and combined in the end. Cooperation processes, on the other hand, include learner interaction which actively shape the learning outcome throughout the entire process. In CSCL literature, as has been mentioned various times, this interaction is considered crucial as contributing positively not only to the group learning outcome, but also to that of the individual. [Soller, 2001] Therefore, cooperation elements should be the part of any CSCL scenario aiming at building up meta-learning skills such as group interaction or inter- as well as intracultural communication skills. Throughout this thesis, the terms collaborative and cooperative will be used whenever possible according to the distinction presented by Griesbaum [2006].

Social dynamics in online learning have been studied by various scholars. It has been found that social dynamics play an important role in learning and it is widely believed that increased social interaction affects learning of both, the group and the individual, positively. [Lindstaedt & Farmer [2004: 195], Ally [2008: 32 f.], Garrison et al. [2001], Soller [2001]] It has also been claimed that, if communication is carried out in a computer-mediated environment, interlocutors are more likely to express potentially controversial opinion. Ho & McLeod [2008] found that a person perceiving a situation as one where his opinion is that of the minority, is in fear of isolation and less likely to speak out in a face-to-face situation. In their study, the authors investigated the influence of lack of co-presence in a controversial-topic discussion scenario by comparing face-to-face and online chat room group discussions. The authors used answers to hypothetical questions asked in an online survey as indicators for identifying differences in potential opinion expression. The CMC condition could significantly increase potential opinion expression by minority holders, thereby evening out this gap. [ibid.] However, limitations of this study should be noted considering its hypothetical nature that asked the participants to conduct a thought experiment.

Effective peer interaction in particular is often seen as crucial in any group learning setting. However, it is questionable whether students made to engage in team projects will automatically develop the social and cognitive competences required for this type of learning, as often expected in current teaching practice. Similarly to what has been reasoned earlier for applying connectivist networked learning to an educational setting (cf. chapter 3.1.4), it is rather to be argued that these skills need to be taught to students in order for them to engage effectively in teams. [Soller [2001], Zottmann et al. [2007: 5]] Taking into account that team communication skills are vital for satisfactory learning outcomes in group learning, instructors should therefore facilitate the development of team communication skills as part of a group project. This applies especially to young students or those inexperienced in team work.

Socio-psychological influences on group dynamics are shared fields of research in psychology and sociology. Findings from these fields can be used to harvest positive effects of these dynamics. Janneck & Janneck [2004: 44] provide an overview of theories on group dynamics

and describe how they could be applied to CSCL, whereas Döring [2003: 497] explains how a sense of community can help support students' self-initiated interaction, making it feel more natural to interact with others that are known to share certain interests or views. If group identity is to be established by underlining the quality of members' social relationships, time should be allowed for participants to exchange personal information so that potential conflicts and differences can be detected an at the beginning. [ibid.] Another possibility is to stress the subjective importance of the shared goal. It is therefore suggested to support the creation of a sense of community in an online learning scenario.

Wilson [2001] calls for appreciating the value of this psychological construct as the outcome of online learning programmes, and includes the following characteristics in his description:

Belonging Members identify with the group and feel a sense of buy-in (at least partially) to the group's purposes and values.

Trust Members feel safe within the group and believe and members will generally act for the good of the whole.

Expected learning Members expect the group to provide value, particularly with respect to their learning goals.

Obligation Members feel a moral imperative and desire to participate in activities and contribute to group goals.

In this construct, the term community denotes a group that has developed these characteristics, or for that matter, members of this group that have adopted them in their perceived impression of the group.

Feeling as belonging to a community is an especially powerful idea in intercultural learning scenarios. Gudykunst lays out dimensions of social and cultural identities affecting intercultural communication situations and discusses identity management and negotiation theories. [Gudykunst, 2003: 120ff.] It has been indicated that students who are made to feel part of a cross-border learning project where a sense of community had been successfully stimulated, intercultural awareness could be raised. [Riel, 1995]

Although most cooperative learning theories described above seem evident, their transfer into practice might be associated with a number of problems. Motivational and responsibility issues are termed social loafing Döring [2003: 498] or lurking Griesbaum [2006: 44] and are especially related to communication in larger, centralized group settings resulting in student's passivity or even discouragement. These have been discussed earlier in chapter 3.2. Additionally, researchers have mentioned:

- Resolution of conflicts, especially in a channel-reduced online setting requires students to develop respective abilities;
- Process losses due to cognitive overloading, e.g. during brainstorming sessions;

- Dominance of extreme opinions or decisions due to a specific hierarchy structure;
- Lack of critical discussion due to a high cohesion within a group due to self-regulation, resulting in undifferentiated thinking and decisions (group think) [Döring [2003: 498], Griesbaum [2006: 74]]

Specifically designed and applied guidance and facilitation, e.g. by mediating between disagreeing groups or monitoring if members' chances for opinion expression are distributed equally can help address these problems.

C+S+C+L=Computer Supported Cooperative Learning

Reviewing all constitutive parts of CSCL described above, it is now possible to combine the various sub-concepts. A rather mathematical approach leads to the equation

CS (Computer Supported*) + L = CSL (Computer Supported Learning) = e-learning
CL (Cooperative Learning) + CSL = Cooperative e-learning = CSCL
*Specifically computer mediated communication

Although this equation is admittedly somewhat abstract and overly simplifying, it relates constituents well and highlights individual aspects of which the entire term is composed. This goes in line with the description offered by Haake [2004], who propose cooperative learning as the lowest common denominator Haake [2004: 2], and with Griesbaum [2006] who establishes:

"Setzt man CSCL zu E-Learning in Beziehung [...], so kann CSCL [...] als eine Menge unterschiedlicher Lehr- und Lernszenarien im E-Learning aufgefasst werden, die durch kooperatives Lernen [...] geprägt sind. Damit ist CSCL kooperatives E-Learning." [Griesbaum, 2006: 81]

A discussion of some basic aspects of CSCL together with their importance within the scope of this thesis follows next.

3.3.2. Two Models of Group Formation in CSCL

Communities of practice in transient, self-directed groups

The concept of Communities of Practice (CoP) is mentioned commonly in literature investigating self-organized CSCL learning scenarios. It follows the approach of situated social practice, refers to groups that form without external influence of an institution, but rather out of internal, interest-driven motivation ("Wir-Gefühl", cf. Griesbaum [2006: 25]). CoPs are defined by the group members' common practice within a certain field or environment. It was first described by Wenger [1998]. In CoPs, the community of learners forms as a

result of common interest in a particular field and out of the need for knowledge exchange. [Arnold & Hornecker, 2004: 278] Given the fact that CoP are of transient nature, degree of organisation, member structure (active, passive, experts, new members) and responsibility distribution can vary. When new members participate, they adopt knowledge from established members by copying them, listening to them, and by actively taking part in community exchange. [ibid.] Often, communication takes place in text form, which not only meets this need but also serves as a starting point for the creation of a shared learning repository. [ibid.: 297]

An example for such a community of practice is that of the Fachschaft IPlus (the student council of the faculty of Language and Information studies at the University of Hildesheim, Germany). Members of this community are volunteers[12] and share the goal of advising and supporting fellow faculty students. Throughout its existence, the group has developed a strategy to manage aggregating knowledge by maintaining a closed Wiki system. (cf. figure 3.3) This serves as an information and coordination platform for current members as well as as a starting and orientation point for new members.

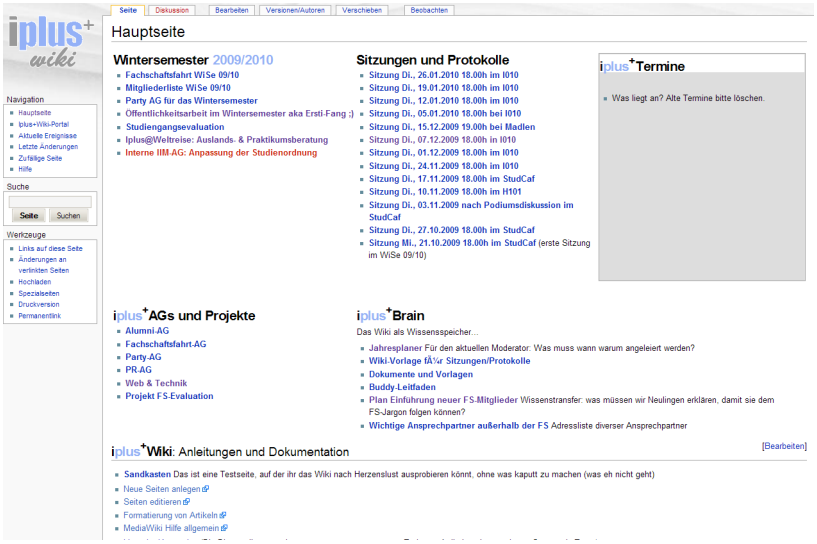

Figure 3.3.: Screenshot of the IplusWiki (http://www.uni-hildesheim.de/iplus/wiki/, accessed 2009 December 18, 00:50 CET)

Yet, the present study investigates communication within an educational, pre-structured context. It seems therefore more appropriate at this point to present a concept which is more adequate in these terms, focussing more on institutionalized groups where learning is facilitated and to some degree directed externally.

[12] No academic credits or financial reward is granted by the university to members at the moment of writing

Communities of Inquiry in formal education settings

Although referring to higher-education CMC contexts, Garrison's model of critical thinking and practical inquiry Garrison, Anderson, & Archer [1999] is considered here as a relevant framework that can provide implications for examining interaction patterns and give implications for improving a structured online group learning project such as the GTP. A central element is that of Communities of Inquiry (CoI).[13] In contrast to CoPs, an externally facilitated learning scenario is characteristic for CoIs. According to Garrison et al. [1999], a community of inquiry consists of three core elements: cognitive presence, social presence and teaching presence.

In this model, cognitive presence relates to "the extent to which the participants in any particular configuration of a community of inquiry are able to construct meaning through sustained communication" [ibid.: 89] This framework helps researchers "to assess critical discourse and reflection" [Garrison et al., 1999: 96] and for that respect identify critical thinking and higher-order learning markers in written educational communication. In its more detailed operationalisation, Garrison et al. developed a four-stage cognitive processing model where indicators are classified into categories believed to represent different levels of cognitive presence, and thus, critical thinking. [Meyer, 2004: 104] The categories are as follows:

1. Triggering (posing the problem)
2. Exploration (search for information)
3. Integration (construction of possible solution)
4. Resolution (critical assessment of solution)

Social presence is described as "[...] the ability of participants in the Community of Inquiry to project their personal characteristics into the community, thereby presenting themselves to the other participants as "real people." [Garrison et al., 1999: 96] However, in a virtual setting of a CMC environment, participants might not only find it difficult to express social cues commonly learnt during childhood socialization for establishing social presence during face-to-face situations as has been described earlier. (cf. chapter 3.2) Rather, in contrast to co-presence communication, interlocutors need to be made aware of each other's presence since this fact cannot be deducted automatically anymore from their physical presence. In a compuer-mediated communication situation, depending on the device and software used for communication, the lack of non-verbal information as well as the absence of visual, audio, olfactory and tactile cues need to be compensated for. Including elements for group interaction in the design of the learning environment e.g. in the form of ice breakers can

[13] The abbreviation CoI has also been used in literature for Community of Interest, a concept similar to that of CoP, which will not be discussed within the scope of this thesis. [Döring, 2003: 281]

help establish social presence by means of personal introduction and sharing of "their understandings, their culture, and the unique aspects of themselves." [Anderson [2008: 48], Ally [2008: 31]]

The last component of the model is teaching presence and refers to "[...] the design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educational worthwhile learning outcomes." [Teaching and Learnin Centre, 2007] This can be achieved by one or more designated members, either from the group of learners or in the traditional form of an instructor. Garrison et al.'s approach to online learning takes into account that students might not engage in activities necessary for establishing cognitive or social presence on their own. Therefore, teaching presence is described as a central constituent of a well-functioning community of inquiry with the other two constituents (social presence and cognitive presence) depending on it. [Garrison et al., 1999: 96] Different functions of teaching presence include design and organization, discourse facilitation, and direct instruction. [Fahy, 2008: 171]

It is only by integrating all three aspects that their value becomes obvious. Any group of learners encouraged to only critically reflect their work by writing down their thoughts (thus, developing cognitive presence) without being able to relate their views to eachother so that each individual feels his contributions are recognized and valued, will not result in a successful CoI. [Garrison et.al. 1999] The findings of the model of critical thinking and practical inquiry give implications towards which aspects should be considered when designing a CSCL scenario where a certain level of learning (in this case, higher-order learning and critical thinking, which go "[...] beyond the transmission of knowledge." [Garrison et al., 1999: 95] is aspired to.

3.3.3. Choosing the right Medium

After having identified components and aspects of CSCL this section outlines some theories related to which dimensions of software have been identified as well as a theoretical analysis of how users select or adopt a medium for a particular purpose. When talking about media or software hereafter, it is referred to a medium facilitating all aspects of CSCL outlined above, which includes both social interaction components: communication as well as cooperation and collaboration. The perspective of this thesis is a user-centred perspective, which should help determine social factors influencing group-computer interaction.

Types and dimensions of CMC software

It is the aim of this thesis to identify development potentials in a particular CSCL project, especially with regard to interpersonal communication. As a next step towards this aim, types and dimensions of tools used for computer mediated communication and cooperation

are outlined in this section. Considering that both, requirements (based on individual didactic goals and participant's needs) of a programme, as well as potentials and restrictions inherent in a variety of web-based means of communication and cooperation, influence the choice of the correct components in order to best achieve the goals set forth by the learning programme and meet the needs of participants. For the purpose of identifying dimensions and consequently their manifestation in communication software, the CMC classification scheme developed by Herring [2007] is referred to. It has been found to provide the abstract approach necessary for applying it to the purpose of this study and will be referred to again at a later point. It is noted here that the field of communication and cooperation software is constantly evolving, with new types appearing and being rapidly adopted by users. [14] The following classification therefore cannot be exhaustive; new software is likely to show a mixture of previously distinct or even opposing manifestations of the dimensions described here.[15] Also Herring [2007] remarks that her list is not exhaustive. Since her classification is focused on, but not limited to, textual computer-mediated communication, and, as she states herself, open-ended, her dimensions are used as a starting point and have been adapted and expanded. The inclusion of co-operational and educational aspects allows a stronger focus on the project analysed in this thesis and provides a more comprehensive overview. For each dimension, potential characteristics have been identified in order to be able to define specific types of CMC software.[16]

1. Synchronicity — synchronous/asynchronous
2. Units of transmission (message transmission) — sub unit-by-sub unit (smaller than a message) vs. message-by-message
3. Persistence of transcript — not stored vs. partially vs. fully stored
4. Size of message (buffer) — limited (limited characters/limited message size) vs. unlimited
5. Channels of communication — e.g. audio, video, textual, images, files
6. Privacy of message - public vs. private vs. limited to those authorized
7. Privacy of sender/receiver identity - anonymous vs. identified by online identity or identified by real identity
8. Awareness of further receivers - aware vs.not aware (e.g. bcc)
9. Filtering of content — filtered vs. unfiltered
10. Message preparation support - e.g. quoting
11. Message representation support - e.g. display rich text formatting or hierarchical categorization of threads of messages
12. Number of sender/receiver - 1:1; 1:N; N:N; N:1

[14] For example, the microblogging service Twitter had been invented, according to its co-founder, with the idea of "[...] sending simple status updates to friends." using a mobile phone. [Williams, 2009: 7'55] The developers had not thought of Twitter as being used as a worldwide instant public news service

[15] More and more social network websites (cf chapter 4.6.2) make use of integrated communication functionalities, offering multiple ways of interaction to their users.

[16] It was not always possible to give an exhaustive list of all characteristics for one dimension (e.g. because the dimension is of qualitative nature). In that case, examples are given for illustration.

13. Social presence support - e.g. typing hints, status indicator (available, busy, away), custom status messages, identity representation (photo, personal information, role within group), degree of activity or participation

A visualisation of these dimensions can be found in figure 3.4. In principle, communication can be distinguished according to its *synchronicity*. The two manifestations are asynchronous and synchronous communication. Asynchronous communication software enables communication independently of time so that interlocutors are not required to be logged on at at the same time and can read each other's messages at their convenience. Examples include email messages and discussion forum posts. [Schümmerer & Haake, 2004: 66] Synchronous communication takes place while interlocutors are present simultaneously and messages are usually not stored. Examples include internet relay chats, telephone calls or video conferences. In order for the interlocutors to be able to start the conversation, they need to be made aware of each other's presence in the software. Functionalities indicating awareness allow the user to actively manipulate their online presence. With the development of new communication software, the distinction is not as clear anymore. Some instant messaging software stores the communication history locally on the user's computer so that asynchronous communication is also possible. [ibid.]

The dimension *units of transmission* is derived from a software application's variation in "[...] the granularity of the units that are transmitted by the CMC system." [Herring, 2007] Therefore, this dimension refers to whether units transmitted are individual characters, words, lines or messages. Units of transmission are either smaller than a message, and transmitted automatically by the system or one unit equals a message In the latter case, the unit size of a single message is determined by the user, i.e. he has to explicitly affirm his intention to transmit the message by hitting a send button. This dimension affects synchronicity: is it possible for an interlocutor to read and give feedback simultaneously during message exchange? If not — as is the case in most current instant messaging softwares, interruption is not possible so that often, messages are displayed in a reversed order because interlocutors were engaged in composing at the same time. [ibid.]

Persistence of transcript on the other hand denotes "[...]how long, relatively speaking, messages remain on the system after they are received." [ibid.] A message may be either deleted immediately, stored for a limited or unlimited amount of time. This does not only have organisational consequences (many email systems allow to messages to be stored until they get deleted, integrating search and tagging functionalities for convenient retrieval), but also does it affect the style and type of messages exchanged — meta-linguistic awareness should be higher when a persistent communication medium is used for composition, as is reflected in the language used in letters compared to that in chats.[17]

[17] A more detailed discussion on social function of language in different media types, see Döring [2003: 185]

The *sender* of a message may be limited in terms of number of characters for textual, length (in terms of time) for a time-dependent media contribution (e.g. video) or in terms of physical message file size. This dimension is termed the size of message.

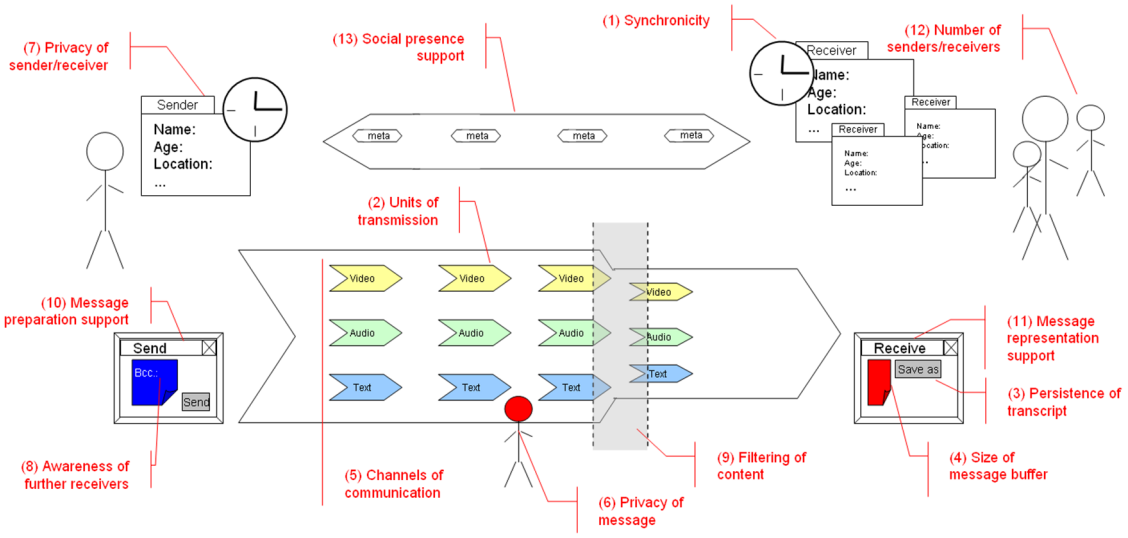

Figure 3.4.: Dimensions of Computer mediated communication

Channels of communication refer to the degree of media integration that is supported by the CMC software. Communication may be carried out through either textual, audio or visual (moving or still images) media channels, or even through an integration of these. Additionally, the exchange of files may be supported.

The dimension of privacy may be subdivided into three parts. Firstly, *privacy of message* refers to whether a message is visible for all (public), only for the receiver (private) or only for a limited, authorized group. Secondly, a participants of a communication may disclose various levels of their identity. They may be completely anonymous, identified by their online identity (pseudonym) or identified by their real identity. A CMC software may support one or all three of these aspects, yet, it may be the user's choice to provide correct or incorrect data or none at all. [Döring, 2003: 343] A third aspect is the *awareness of further receivers*: a CMC software may provide the possibility to hide one or the entire list of receivers (blind-copy function in emails). Similarly, a user may send a message to a group of people without knowing every member (e.g. a message in a forum).

A CMC software may further automatically *filter* or shorten parts of a message. (e.g. truncation because of size limits, filtering of words from an index to avoid offensive postings)

On the sender's as well as on the receiver's side, *creation and/or presentation support* may be provided in various ways by CMC software. Quoting of previously received and/or sent messages as well as presenting messages in categories sorted by time, context (e.g. topic) or participants. thereby creating hierarchical message trees and threads help to keep track of

communication especially in asynchronous communication settings. Additionally, personal information on the sender or receiver may be included at the time of reading or editing a message, which can support a richer and more realistic representation of the interlocutor and support personal interaction.

Döring [2003] distinguishes between three types of communication referring to the *number of senders and receivers* that may be involved using a particular communication software: one-to-one (1:1, e.g. private email message), many to many small scale (n:n, e.g. group email lists) and one-to-many large scale (1:N, e.g. publishing content on a website). Döring [2003: 49]. The author of this thesis suggests to include one more scale: N:1. This occurs when e.g. an online survey is filled in and submitted to one person who receives each submission individually, but constructs the ultimate meaning by combining all answers. Often, this differentiation is not clear-cut as it is not always possible to determine the number of receivers of a message (e.g. in a forum) or affordance of the potential of a communication technology varies in between these extremes.[ibid.]

A last, but nonetheless important dimension concerns the way *social presence* is supported by a CMC software. As mentioned before (cf. chapter 3.3.2), social presence refers to user's ability "[...] to project their personal characteristics into the community." [Garrison et al., 1999: 96] Here, this dimension is extended to the way in which a person's virtual presence as well as personal and emotional condition is made visible. In order to become aware of the different modes of presence which are normally conveyed in a face-to-face situation, the medium needs to provide means for incorporating this into the online environment. [Hoschka, Prinz, & Pankoke-Babatz, 2001: 277] As has been shown, social presence can positively affect the level of the learning outcome and has been linked to increased indication of higher-order learning. [Garrison et al., 1999] Presence awareness can be modelled e.g. by indicating whether a user is logged in and ready to communicate (e.g. by means of a status symbol which can be set to different levels, such as 'online', 'busy' or 'away'), by providing a typing hint in a synchronous, textual environment (a small symbol indicating that a message is being composed) or by keeping a history of users' activities (e.g. by indicating if someone has changed its profile picture or left a comment in a forum). [Hoschka et al., 2001: 279] Moreover, ways to enrich personal identity representation in a channel-reduced environment (e.g. uploading personal photos, editing personal information, and stating a role within a group) can help convey the degree of potential that discussion partners may expect.

Media Selection and Appropriation Theories

Although, as outlined above, it is possible to identify a variety of characteristics affecting communication differently in a given situation, a particular medium is rarely chosen based on a purely rational cost-benefit analysis. Researchers' investigations of reasons and conditions for media adoption will be discussed during this section.

In extra-institutional settings, i.e. in settings where no organisationally pre-defined communication policy or guidline exist, selection of communiction media[18] is determined by rational and efficiency-motivated choice, individual preferences or technological restrictions. [Cho & Lee, 2008: 550] Often, choosing the right medium is done with the motivation to accomplish a certain task in a given situation. [This is referred to as *media appropriateness*, cf. Döring [2003: 134]] From this perspective, each medium offers a certain degree of media richness, with more or less potentials for showing social presence or backchannel feedback (the support for implicit communication, ambiguity and awareness for interlocutors' physical or virtual presence) Consequently, a medium is considered most appropriate if it contains the right degree of media richness according to a task's and situation's requirements. As an example, in order to close a simple information gap, a medium with low media richness, such as email, can be satisfactory, whereas face-to-face meetings would are considered most effective for getting to know somebody in person. This context-free classification of media has been criticized in CMC literature. [Döring, 2003] As has been mentioned earlier, a medium's use is always context dependent and may vary in degree and nature. To illustrate, an email may be the chosen medium for getting to know eachother by two members of a dating website, particularly because it possesses a low potential for transmitting indications on personal traits, allowing interlocutors to control and manipulate what is conveyed about themselves.

Following this criticism, Cho et.al. have developed a model of media selection which takes into account socio-structural group phenomena, which, so they argue, have a great influence on the use and appropriation of technology. Since communication is inherently a group process, the choice of a communication medium is not only a rational, task-oriented or technology-driven choice, but is affected by "[...] how social structures constrain the use of technology in groups and how technology, in turn, defines and redefines new social structures." [Cho & Lee, 2008: 551] In this approach, users do not actively select the most appropriate medium in respect to a particular task or communication type. Instead, they may even be prevented from adopting a more efficient or powerful medium due to "[...]the constraints of the existing social context and structures." [ibid.] Döring [2003] therefore adds a normative media selection approach which ascribes individual's media evaluations not to processes of rational, but rather subconscious, socially defined adherence to a group's norms. [Döring, 2003: 143] Groups tend to stick with a structure that works well and are reluctant to give up this structure as this would involve costs and risks. Also, for communication to function, all involved need to use the same type of medium in order to be part of the communication. Vice versa, added value of a medium might not become apparent until a medium is adopted by a certain amount of users. For instance, electronic mail was not as effective in its early stages when it was only used by a few. The more users adopted the new technology, the more useful and thus attractive it appeared to others. But since usefulness, and thus attractiveness of a communication software, increases with the amount

[18] Communication software and media are used interchangeably here; communication software is considered a medium to convey messages and information in any communication process, c.f. chapter 3.2.

of users, this turns into a circular argument, often called critical-mass theory. [Morris & Ogan, 1996]

Schlickau [2009] additionally introduces two socio-contextual dimensions influencing the selection of communication software. The degree of publicity (Öffentlichkeitsgrad) determines to what extend a message is available to the public. [Schlickau, 2009: 285] This can be illustrated by examining users' personal and public communication in social networks. If associated with a specific person (e.g. having added him as a 'friend'), a user can post a message on that other user's profile page. This post can be viewed by all members of the network or only be the friends of the other user, depending on security settings. In either case, this message is partly public (only a small part of the entire Internet users can view it). The degree of familiarity among participants (Bekanntheitsgrad) determines the type of communication software chosen depending on the type of relation between interlocutors. [ibid.] Naturally, content will vary if a user is to post a message in an open-to-all forum or in a private email.

3.3.4. Conclusion

From the discussion in this chapter, it can be concluded that CSCL, as an emerging field of research [19], incorporates research from a variety of more traditional disciplines, namely: sociology, psychology, pedagogy, communication and media studies, information technology and information sciences (including subfields such as human-computer interaction, computer-mediated communication and e-learning). As such, CSCL is a truly multi-disciplinary field. Researchers publishing literature will do so from their particular perspective, using methodology and paradigms rooted in their respective field of study. [Haake, 2004: 2] As a consequence, when trying to contour the entire concept of CSCL, contradicting and overlapping ideas emerge and need to be resolved or at least considered. For example, there is an ongoing discussion around the meaning and definition of the second C in CSCL, whether it refers to 'cooperative' or 'collaborative'. [cf. chapter 3.3.1, as well as Haake [2004: 1];Griesbaum [2006: 77]] Scientific discussions can also be distinguished between those emphasizing institutionalized learning in order to achieve specific curricular learning objectives and those underlining the potential of CSCL to support informal and so-called life-long-learning and the formation of communities of practice. [Haake [2004: 358], Panckhurst & Marsh [2008]]

Despite the broad scope of theories building up the foundations of CSCL, it is argued here that CSCL can be seen as a separate field of study. In line with Wessner & Pfister [2001], it is established that using the potentials of computer technology and combining them with pedagogical aims leads to a new way of learning and teaching, which includes new, by more

[19] according to Haake [2004], CSCL can be traced back to a conference in 1989, making it a relatively young discipline [Haake, 2004: 1]

traditional sciences previously not studied aspects as well as challenges. [Wessner & Pfister, 2001: 251]

Throughout this chapter, dimensions and types of computer-mediated communication software have been described along with theories investigating the dynamics behind media selection decisions. It has also been shown that online group learning is influenced by a number of factors and always needs to be considered in its context. The following chapter therefore identifies further dimensions by which a CSCL scenario may be characterized.

3.4. Dimensions of CSCL Scenarios

What are the determining factors influencing a CSCL scenario in practice? It is the aim of this chapter to identify defining dimensions that allow a characterization of any educational programme where computer supported cooperative learning is employed in the sense described in the previous chapter. This can help to identify advantages and limitations and can consequently give implications for programme design and planning, including aspects related to communication. The following dimensions are drawn from literature discussing either CSCL as a concept of its own [Haake, 2004], or one of CSCL's constituents (e.g. cooperative learning, cf. Wessner & Pfister [2001]), or they are based on a similar idea that focuses on additional aspects. [e.g. Strijbos et al. [2004] and his concept of computer supported group based learning (CSGBL)].

Dimensions of intergroup communication from a linguistic, intercultural communications and media studies point of view have been discussed earlier. (cf. chapter 3.2) This section will contribute additional aspects allowing the categorization of and giving implications for the design of this type of learning scenario. The level or degree to which these dimensions are implemented in practice in a particular scenario may be pre-determined (participants) or deliberately adjusted depending on objectives. It has been indicated that there is a connection between deciding for e.g. a particular level of directness and supporting a certain level of learning.

An aggregation from CSCL literature [Haake [2004], Wessner & Pfister [2001],Strijbos et al. [2004] and Anderson [2008]] leads to the following list:

Place (co-presence vs. dislocated) One of the most important distinctions is whether learning takes place face-to-face (co-presence) or via computer networks without physical presence (dislocated). Types of programmes where these situations are mixed, often refer to a so-called blended-learning approach. [Haake, 2004: 3]

Symmetry (same vs. unequal level of knowledge) According to Wessner & Pfister [2001: 252], CSCL are affected by the groups' level of knowledge or skills relevant for the learning scenario. In the case of equal distribution between all participants and facilitators, it will be the aim of the group to cooperatively increase their relevant knowledge or skills.

In case of unequal distribution, it will be the aim of those with a deficit to move to the level of the rest of the group. This is problematic in the way that this concept refers to traditional formal knowledge transfer approaches. (cf. chapter 3.1.2) With informal knowledge such as intercultural awareness or social communication skills, there might not be a clear 'higher' or 'lower' level.

Degree of facilitation (autonomous vs. guided learning) Learning scenarios can differ in their level of pre-structuring. The degree of facilitation describes if groups of learners are left to determine their own organisational structure, which may include identifying and structuring of the entire learning process, from allocating resources to defining learning outcome; or if all this has been determined in advance and will be enforced during the learning process. [ibid.: 253]

Duration (persistent vs. transient) A distinction can be made between learning programmes aimed at 'life long learning' and those with a limited project-oriented set-up taking place over shorter periods of time. [ibid.]

Aim Here, the question is whether there is a fixed, didactically defined learning outcome and if this is the same for the entire group. [Haake, 2004: 3]

Participants It is claimed that quality and outcome of an online learning scenario is influenced by determinants such as group size, as well as homogeneity in gender, age, social stratum and nationality. [Strijbos et al., 2004: 406]

Degree of interactivity As has been outlined various times, the different types of possible interaction are considered very important factors in facilitating learning at different levels. Learning scenarios can vary in terms of

- Interaction possibilities that the computer technology used provides.
- Participants' skills to successfully interact with each other (depending on social and possibly intercultural communication skills)
- Participants' skills to interact successfully with the software's interface
- Facilitators' skills to welcome, allow, endorse and guide interaction in all directions
- Interaction potentials incorporated within the scenario's organisational structure [Anderson, 2008: 55]

Since interaction is discussed frequently in CSCL literature, effects and issues related to this important component are elaborated further at this point. Kerres [2001] argues that achieving a desired learning objective is closely related to the characteristics of a communication medium. The type of cooperative learning described throughout this thesis is characterized by social interaction in groups. If the aim is to develop coherent, well-functioning, geographically distributed teams of learners that are connected by a computer network, a CSCL scenario should be designed to provide a certain degree of interaction support. As Garrison et al. [1999] describe in their model of critical thinking and practical inquiry (c.f.

chapter 3.3.2), communities of inquiry can actively engage in educational discourse if required structures are in place and facilitated (cognitive presence, social presence, teaching presence). A communication and cooperation software may support this by providing the respective functionalities, such as those helping participants to present personal information (e.g. personal profile pages) or engage in off-topic conversation (e.g. general discussion thread in a forum). It should be kept in mind, however, that these reality-imitating functionalities of software require users to become active in a way that is not always obvious or logical. Studies have indicated that users do not always adopt these methods on their own but need to be reminded e.g. to upload profile pictures. This is due to a similar chain of logic as in the critical-mass model , a concept which has been outlined previously in this chapter: the added value of employing a functionlity only becomes obvious if many users adopt it, which makes it hard to convince users to lead the way. Similarly, a vivid discussion requires someone to start it off and yet, the motivation to contribute to a group discussion is found to be higher if a number of interesting posts have already been written. [Kerres, 2001: 265] Additionally, since an individual cannot be held responsible immediately, the lack of co-presence imposes less obligation to become active, and thus places a higher barrier.

These dimensions represent but one possibility of classification but are considered useful enough for characterizing the web-based group learning project discussed during this thesis.[20]

3.4.1. CSCL in an intercultural Context

One of the peculiarities of this study is that it examines web-based communication between groups belonging to different cultures. This chapter investigates issues related to the combination of the educational goals in an intercultural learning project and its implementation in a web-based, textual communication environment. Effects of intercultural collaboration in a web-based environment have been discussed in chapter 3.2.

Most literature on intercultural communication investigates intercultural encounters in co-located face-to-face meetings; although the last decade has seen a growing number of computer-supported educational and cooperative work projects carried out involving geographically dispersed teams. [Gibbs, 2009: 89] On the other hand, it is claimed that human-computer interaction (HCI) research, by only considering single-user interfaces without looking at multi-cultural settings, has not put enough emphasis on cross-cultural effects of technology use either. [Vatrapu & Suthers, 2009: 155]

[20] Cf. Herring [2007] for a different classification of situational factors related to online language use

Developing Intercultural Awareness as a first Step towards Intercultural Competence

Although GTP participans will rarely have the chance to meet up in person[21], one of GTP's declared goals is to *Promote intercultural and regional understanding and sensitivity.* [Riel et al., 2008: 6] After examining literature on the concept of intercultural competence (ICC), it will be asserted in this section that this goal's essence (intercultural sensitivity, i.e. awareness) is in itself a key component of many intercultural competence frameworks. Due to its normative character and the vast differences in approaches towards measuring the theoretical concept of intercultural competence, its successful adoption is relatively hard to measure (compared to, e.g. the goal Learn to use Telecommunications Technology). Yet, it is an objective well-worth aiming at in the context of a CSCL project. [Steigenberger, 2009: 153] It is therefore to be examined what kind of support literature from the fields of CSCL and intercultural communication provides and which consequences can be derived.

Deardorff [2006] conducts a literature review on scholars' definition and commonly included components of intercultural competence and concludes that, in intercultural communication research, many scholars adopt a process-oriented model when addressing the question of how a person acquires intercultural competence. Process-oriented is meant in a three-fold sense here.

Firstly, with these models, researchers have tried to identify stages a person goes through on the way towards reaching what Deardorff [2006] describes as the "[...] ability to communicate effectively and appropriately in intercultural situations based on one's intercultural knowledge, skills, and attitudes." [Deardorff, 2006: 186]

This implies that, in a particular intercultural situation, an intercultural competent person perceives an interaction as successful in the way that he reached a goal (effectiveness). At the same time, the interlocutor perceived that person's communicative behaviour as having met the requisites of that particular situation (appropriateness).

Secondly, Deardorff [2006] found that researchers agree on a set of skills that should be developed over time by a person aiming to improve intercultural competence. The top-five skills composing the concept of intercultural competence mentioned by researchers include:

1. Understanding of others' world views
2. Cultural self-awareness and capacity for self-assessment
3. Adaptability — adjustment to new cultural environment
4. Skills to listen and observe

[21] Only in seldom cases, e.g. the Water Wetlands Project, project partners decide to take their project further and meet each other, cf. http://gtp-lc-waterwetlands.pbworks.com/ (accessed: 2009 December 1, 19:40 CET)

5. General openness toward intercultural learning and to people from other cultures. [Deardorff, 2006: 187]

From this list, the ideas of understanding, awareness and general openness can be drawn as basic attitudes all related to the concept of being conscious and sensitive about the peculiarities of intercultural situations. This is why not only Deardorff [2006] but also Fantini [2000] put this concept at the base, or into the center respectively, of their models of intercultural competence. Fantini writes:

> "Awareness is in and of the "self" and it is always about the self in relation to someone or something else. Hence, all awareness is "self"-awareness, and to speak of "self"-awareness may be redundant. [...] It is reflective and introspective. In turn, it can be optionally expressed or manifested both to the self and to others. Awareness is difficult to reverse; that is, once one becomes aware, it is difficult to return to a state of unawareness." [Fantini, 2000: 29]

Thirdly, a person is never at a stage of maximum intercultural competence. Instead, ICC inherently is an ongoing process in itself and includes different levels of a person's relation towards one culture, with no ultimately defineable goal. [ibid.] Consequently, before attempting to make students interculturally competent, programmes — especially those aiming at young or interculturally inexperienced students — should engage students in developing the type of attitude described above. More or less obvious cross-cultural differences will be recognized fairly quickly. But in order to move from ethnocentrism — where differences are automatically associated with a strange, or worse way of doing things — to ethnorelativism — where different behaviour is put into cultural context without being judged Deardorff [2006: 42] — students need to develop the "[...] ability to recognize the diversity of methods by which different peoples attempt to solve humanity's common problems." [Ortuno, 1991: 449]. This process involves more than confrontation with other ways of coping with life's problems, but an active engagement in contextualizing and analysing these differences, leading to respect and appreciation for instead of depreciation of otherness. This lays the foundations for students to become not only interculturally aware, but even interculturally competent.

Research at the Nexus of Education, computer-mediated and Intercultural Communication

Vatrapu & Suthers [2007] investigate the challenges involved in intercultural online collaboration in an educational context. It needs to be pointed out critically at this point that their study is based on fuzzy concepts using cultural container metaphors, such as "East Asian learners" and "Westerners". It also employs the easy-to-use but often for their simplifying approach sceptically discussed cultural dimensions developed by Hofstede and Hall without discussing them critically. [Steigenberger, 2009: 141] This might be due to the researchers'

provenance from a technical science field (information technology) where they also draw their abstracting, category-prone scientific approach from.

Nevertheless, Vatrapu and Suthers lead scientific investigations at the interface of learning, intercultural communication and technology towards an integrated view of these fields. The value of their studies lies in their extension of HCI foundations (investigating interaction between humans and technology) by adding the idea of technological intersubjectivity ("interacting with people and information" [Vatrapu & Suthers, 2009: 157]). The two researchers developed this framework as a result of the combination of fields of research where cross-cultural variability has been suggested (social behaviour, cognitive processes, communication, interacting with computers). In other words, their research investigates cross-cultural differences in the dynamic interplay between these four processes by measuring and analysing the online asynchronous interaction between groups with different cultural backgrounds. One of their intentions is to answer the question "To what extent does culture influence participants' appropriation of affordances in a CSCL environment?" [Vatrapu, 2008: 6] This curiosity aims at analysing how a particular social group (or culture) perceives the potentials integrated in a technology and consequently makes use of this technology in their own peculiar way. Since meaning of appropriate communicative behaviour (and hence, use of CMC technology) is negotiated and established anew during each communication situation, interpersonal and especially intercultural factors are likely to be of influence. [ibid.: 7] Results point towards the assumption that interaction and communication styles commonly employed by a person during co-located communication will be adopted and transferred to computer-mediated contexts, thereby striving to act effectively and appropriately according to the situation. [ibid.: 36] The authors also suggest that preferences for the degree of social and cognitive presence may vary between cultures communicating in CMC environments. Consequently, Vatrapu and Suthers call for implementing various "alternates for action" [ibid.], thus facilitating differing communication styles instead of monocultural design implementations favouring only a particular type of communication style.

Further considerations on the application of these findings lead to the question whether a 'lean' (in terms of social presence affordance) communication environment may even hamper successful deployment of intercultural competences in the sense described above in a CSCL environment which aims at fostering intercultural awareness. It has been mentioned that social presence is a concept to be facilitated by CMC software for successful group interaction independently of potential cultural differences between members of a group. As a result, it can be estimated that CMC environments may even encourage the deployment of culture-specific communication styles — even by a person with a relatively high intercultural competence level — because estimation of effective and appropriate action may not be accurate anymore due to the lack of nonverbal signs of confirmation or disapproval by the interlocutor. Therefore, a CSCL software employed in an intercultural context needs to

provide ways of reflecting appropriateness and effectiveness of communicative behaviour by means of facilitating communication rich in social presence indicators.

3.4.2. Conclusion

Elementary components of computer-mediated communication software have been classified and characterized in the previous chapter. This chapter has now highlighted dimensions related to organisational and structural characteristics of a CSCL scenario where a CMC software is to be applied. It has been indicated that it is not possible to exhaustively identify crucial characteristics that apply to all types of CSCL scenariosat the same time.

Literature aiming at providing guidelines for the design of a CSCL programme often takes its premises from established fields such as computer sciences (in that case: requirements engineering), where pedagogical and psychological factors are operationalized and abstracted from. [Kerres, 2001: 367] Or it relies on fields that have developed their foundations during the early stages of computer-based learning, where the focus is on enhancing traditional class-room learning with computer technology, at the same time supporting the individual learning process ('classical' instructional design and e-learning approach). [Allmendinger, 2004] Instead, following Strijbos et al. [2004][22], it is suggested that, when designing any CSCL scenario, five so-called 'critical elements' are to be considered before moving on to its implementation. These five elements are: learning objectives, task-type, level of prestructuring, group size and computer support. As has been discussed in this chapter, different types of interaction are crucial for achieving different types of learning. Strijbos et al. [2004] suggest that the degree of these five critical elements may determine the type of interaction taking place during learning. Therefore, deciding on an implementation of these elements directly affects which type of learning is supported. In other words, if a particular learning outcome is to be achieved, each of these elements can be adjusted in order to support this outcome. They further propose a six-step incremental model guiding the CSCL scenario designer through the development process. This results in the models' main idea: to define crucial aspects of the learning scenario before implementing it in order to design for a certain type of interaction and, in this way , define the nature of the CSCL scenario.

Although there are limitations to this model (e.g. there has been no empirical support for the improvement in quality of the design process or of its result), it is regarded as a useful approach for an alternative method of implementation and investigation of success factors in CSCL scenarios. Further, it has been found that certain levels of meta-learning

[22] STRIJBOS et al. (2004) build on an idea which they call computer-supported group-based learning (CSGBL). Given the elaboration in their publication, CSGBL can be considered as a concept similar to CSCL with a greater emphasis on group learning.

skills, such as problem-solving and deep reflection, can be supported by encouraging critical thinking and higher-order learning. At the same time, it has been argued that, by creating a sense of community, and adopting the suggestions of Wilson [2001], these meta-learning skills as well as team communication and knowledge management skills are supported.[23]

In accordance with constructivist and connectivist learning theories which emphasize learner autonomy (cf. chapter 3.1), studies have suggested that student-led teams can be particularly successful in achieving these aims and in sustaining learner motivation. However, the 'ideal' degree of autonomy as well as level and type of interaction cannot be determined without considering the respective situation and context. Neither is it sensible to postulate learner autonomy to an extreme degree in all CSCL scenarios, nor should traditional learner-teacher hierarchy always be kept. Autonomous and student-initiated learning and guidance by facilitators are not necessarily contradictions, but can be important elements of a carefully-planned designed of a successful CSCL scenario. Additionally, theories have suggested that the group's social structure (homogeneity in terms of age, knowledge level and -distribution, social or national culture, etc.) plays an important role and should be considered, next to general project and learning objectives, when putting CSCL theories into practice.

Finally, a few restrictions apply when implementing theories to the scope discussed in this thesis:

Many studies and theories derived from studies focus on higher education scenarios. [Means, Toyama, Murphy, Bakia, & Jones, 2009: xi]. One reason for this could be that it is obvious to study an area such as CSCL first in the institution where this area is well-established: computer-supported cooperative learning has become an emerging method of teaching and learning at higher-education institutions. [Rovai, 2002: 1] Therefore, theoretical conclusions should be drawn with care when applying theories to a secondary educational context such as GTP.

A further restriction refers to the extent to which research scenarios discussed are applicable to an interculturally rich learning scenario. It could be shown that assumptions on effectiveness and appropriateness in communication are not universal. Only few theories take this into account when giving out advices e.g. on the design of 'ideal' CSCL software.

3.5. Applying the Concept of CSCL to GTP Practice

The following section analyses the theories investigated during the previous chapter in their application to the Global Teenager Project.

[23] cf. Griesbaum [2006: 13ff.] who also gives a more elaborated overview of the classification of knowledge management in the context of learning

3.5.1. Meta-learning Skills through Written Communication

One of GTP's goals is to promote writing across the curriculum. Research on text-based communication in CSCL contexts indicates that by showing cognitive presence through engaging in textual interaction, higher-order learning and critical thinking are encouraged by using written language during the communication process. (cf. chapter 3.5.4) It is further argued that writing is by nature explicit and reflective and "[...] encourages discipline and rigour in our thinking and communicating." [Garrison et al., 1999: 90] The extent to which writing is encouraged becomes clear when recalling the set-up of GTP Learning Circles. Collaborative writing of texts, which will be presented in an email or wiki entry to a group of readers, thus injecting a certain degree of binding nature to content produced is a central pedagogical element during various phases of a Learning Circle . From this perspective, GTP is indeed likely to support well the development of these meta-learning skills. Possible shortcomings of this view will be discussed at a later point of this study. (cf chapter 4.3)

3.5.2. CSCL Dimensions and the Global Teenager Project

Due to the great variety within GTP participants, manifestations of CSCL dimensions discussed first are likely to vary from Learning Circle to Learning Circle. Especially when looking at the dimensions symmetry, participants, and aim, this variation becomes obvious. The Learning Circle themes vary in complexity and may demand different levels of knowledge from students (e.g. compare "Teen life" and "Politics in my country"). Symmetry of knowledge is more or less equally distributed across classes of one Learning Circle, but also depends on participants' age structure and e.g. whether groups with special needs are involved. Within one class, teachers are probably the role models but not necessarily the ones who transfer knowledge. Yet, it is to be expected that preferences in teaching and learning styles vary across cultures, so that different cultures are likely to attach different values to a certain role model function and hierarchy model. Additionally, the dimension 'aim' (extent of fixed definition of learning outcome; variation within the group) may differ depending on the degree of curricular integration of the project. If GTP is integrated as a fixed classroom activity connected to what students were studying (23.9% in the last two Learning Circles[24], teachers are more likely to attach certain goals to the outcome of a GTP Learning Circle (e.g. language skills related to the topic), whereas participants in a voluntary after-school club (also 23.9%) are less restricted in their activities. Aims may even be different within one class; especially if responsibilities are distributed among students.

With regard to the degree of facilitation, it has been described previously that GTP follows a restricted self-initiated approach where student initiative creates ownership as well as

[24] Data are available in the file `iicd_students_survey_data.csv` in the electronic distribution of this thesis or available from the author

responsibility, but where it is recognized that a certain level of guidance and teacher-learner-content interaction needs to be ensured at the same time.

Aspects underlined in the CSCL dimension of degree of interactivity include possibilities to engage with other learners as well as teachers — be it by synchronous video conferencing or by asynchronous, text-based communication — in order to develop and shape the learning outcome cooperatively. The model of Communities of Inquiry was adopted to operationalize factors in well functioning, and highly interactive teams aiming at higher-level learning outcomes and the development of critical thinking skills. [Garrison et al., 1999] Applied to the GTP, a Learning Circle can indeed be considered a community of inquiry. The three basic components of this model (cognitive presence, social presence and teaching presence) are incorporated to some degree at least. During this thesis, the degree and quality of interactivity in GTP is considered one of the key considerations. Therefore, the discussion on applying CSCL theories focussing on interaction to the GTP context will be continued at the end of of this chapter's conclusion and taken further in the following chapters.

3.5.3. Establishing a Sense of Community in GTP

In this group learning project, effective peer-interaction is supported e.g. by providing a structured frame for personal introduction between classes during the introduction phase. This is especially important considering the different cultural origin and, as a result, the greater uncertainty related to the interlocutor's style and norms of communication. As postulated by Wilson [2001], sense of community is a valuable concept to ensure a positive learning outcome in any group project. Also Garrison et al. [1999] identify group cohesion as a key element for successful cooperative communication and the creation of a community of inquiry. This may be a particular challenge if members are in dispersed geographical places and communication takes place web-based without co-presence. Consequently, it is to be investigated whether GTP supports this sense of community according described in this model. The following paragraphs describe how the dimensions of this construct developed by Wilson [2001] are implemented into GTP.

Belonging The awarding of prices for good results and the distribution of certificates to all participants supports members in their identification with the project. In order to develop a project identity, GTP has recently undergone a re-design of its colours, logo and website. A consistent and distinctive external as well as internal presentation further contributes to this aim. The new website includes various community aspects. Country coordinators are encouraged to take ownership of their country page by creating a country introduction page. Additionally, the page will be available in all five languages spoken in Learning Circles.[25] Localized website content should appeal to visitors of different cultural origins more than unified, non-localized content. [cf. Kralisch, 2005] Moreover, the integration of children with special needs helps otherwise marginalized children to feel part of a global project.

[25] At the time of writing, the page's multi-language implementation was still under construction.

Trust Children participate in the project in their own environment and are guided by their own teachers. There is a pre-defined structure with phases that indicate what type of activity is expected at which point. Teachers are given detailed instructions in the Teacher Guide and guidance is provided by Learning Circle facilitators when they need help. These elements encourage both, teachers and students, to develop trust in their own capacities to achieve a successful outcome of the project and to "[...] act for the good of the whole [...]". [Wilson, 2001] During the last two Learning Circles, 23.9% of teachers stated that their participation in a Learning Circle was not integrated into school curricula but they offered the project as an optional activity. [cf. the GTP teachers' survey conducted by IICD, available in the file `iicd_teachers_survey_report.pdf` in the electronic distribution of this thesis.] In these cases, the voluntary character contributes to students' intrinsic motivation.

Expected learning This dimension refers to whether students perceive the outcome of a group as valuable. It has been shown that a great majority of students claim to have achieved their goals (90.3%) during the last two Learning Circles. Students' statements for the reasons of their goal achievement include e.g.[26] "Because every single thing I have worked on was interesting and fun and I was curios to find out the answers of sponsored ques...om the other participants in the project. I worked hard on discovering the questions but I never felt tired, I simply enjoyed." [IICD M&E survey, respondent's ID: 21601] Impact on education was another construct analysed during this survey and was made up of four components: inquiring on students' cooperation with classmates, improvement of quality of education, understanding of the Learning Circle theme and research skills. The results indicate that a majority of 70% of students felt an impact on their education, although individual scores between countries varied from 12% in Hungary to 100% in Egypt. These results (obtained from an ex-post evaluation) and the fact that many school classes participate more than once in GTP, indicate a high value attribution to the project.

Obligation According to this last dimension, GTP participants should "[...] feel a moral imperative and desire to participate in activities and contribute to group goals." [Wilson, 2001] As is suggested by GTP first-time participant's survey,[27] the greatest number of participants indicated *Make friends with people from different cultures during the Learning Circle* as their favourite activity (33.63%) when asked to rate five activities according to their preferences. Here, it is important to consider the multi-cultural origin of GTP participants. Although the concept of friendship in terms of "[...] a personal relationship between individuals who are not interchangeable." is a phenomenon observed by researchers in many different cultures, there are cross-cultural variations in its basic characteristics. [Krappman, 1996: 27] However, in most cultures observed by researchers, friendship is characterized by "[...] a form of relationship that is grounded in personal commitment." [ibid.: 25] Hence, although students might not be aware of this, they should be willing to show pro-social action and mutually contribute to group goals during their participation in GTP.

[26] the following answers are taken from the IICD M&E data which can be found on the `iicd_students_survey.csv` of this distribution or are available from the author.

[27] The set-up and discussion of the survey is done in chapter 4.1.

An analysis of the four categories and their implementation into GTP shows a high level of compliance with Wilson's model. Since an empirical study validating this model could not be found, it is concluded here that the frame and structure of GTP supports participants to engage in a community in many different ways, thus, setting the foundations for the GTP goal*Develop Co-operative and Collaborative Work Strategies* (Learn to work as members of a team with peers in other places; Understand responsibilities that come with group participation; Learn how to work co-operatively with partners in distant locations). [Riel et al., 2008: 6]

3.5.4. The GTP and Garrison's Model of Practical Inquiry

After having confirmed that there is a high probability for a sense of community within GTP Learning Circles, it is now possible to investigate how this community develops critical thinking or inquiry throughout the collaboration process according to the concept of a community of inquiry. Figure 3.5 demonstrates how the stages of cognitive presence in Garrison's et al. model of practical inquiry may be incorporated into GTP phases. According to Garrison et al. [1999], learning in a CoI starts from "[. . .] a state of dissonance or a feeling of unease resulting from experience." [Garrison et al., 1999] In GTP, this urge for inquiry is modelled and enforced when students receive questions from Learning Circle partners on a Learning Circle theme which aims at identifying cultural diversity. (For example,they might be asked to tell others about rules and restrictions for students in their school.) Only by answering this question do they become aware of the fact that they had never thought about this and that there might be different ways of thinking than their own. Thus, they engage in the second phase, called exploration, which corresponds to GTP's research phase. At the peak of the model, deliberations are presented to partners.

In GTP, this is where critical reflection with a group's answer ends. What Garrison et al. describe as integration may happen now when participants explore answers they have received from others to their own question. By identifying recurrent points in other's answers and summarizing them, insights into cross-cultural views on the Learning Circle topic may be gained. (For example, the enforcement of rules in their school is relatively relaxed compared to schools on the other side of the world, although they had always thought it to be too strict.) This again, leads to an application of findings to students' own reality, hereby closing the circle. The application of the practical inquiry model is admittedly artificial to some extend since it splits the inquiry process in two parts which each deal with a different problem. Given this restriction, it could nevertheless show that the two halves of the circle are not connected by continued, reciprocal exchange, but rather by one-sidedly presenting and accepting findings to/from others. There does not seem to be room for comments and feedback supporting mutual relationships across the two halves, thus interconnecting the two question-and-answer semi-circles.

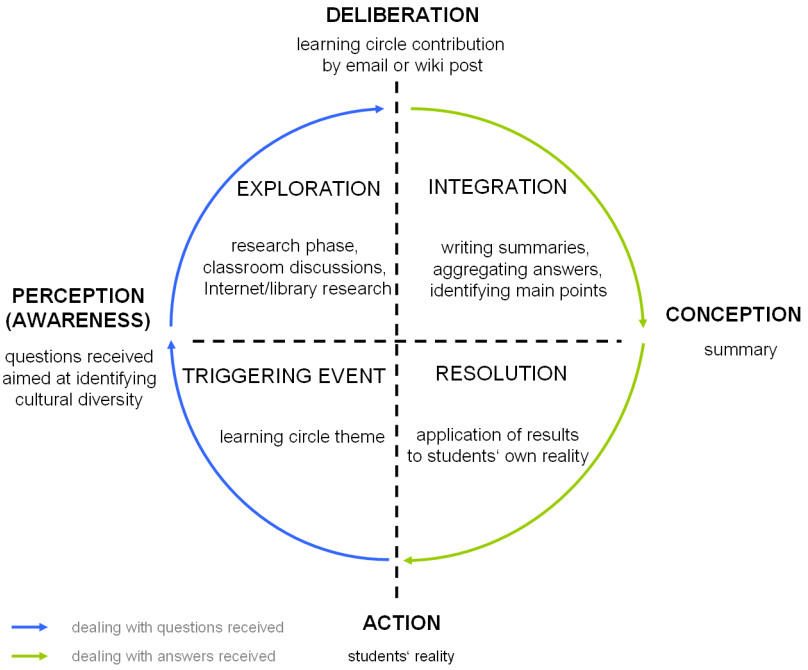

Figure 3.5.: Garrison's model of critical inquiry applied to the GTP

Having noted this deficiency, the following chapter will explore its potential consequences and take the discussion further. Finally, by having applied CSCL theories to GTP practice during this section, the following chapters will outline present shortcomings of the Global Teenager Project and identify and suggest ways of improvement by means of incorporating a communication component which takes into account the aspects pointed out here.

Part II.

Case Study: Web-based Communication within the Global Teenager Project

Development Potentials of the Global Teenager Project | 4

4.1. Survey Instruments

This chapter gives an overview of the survey instruments used throughout this study. Two of them have been developed by the author and addressed participants of the current (September 2009) Learning Circle, whereas one is a standard evaluation tool developed and deployed by the monitoring and evaluation (M&E) department of the International Institute for Communication and Development (IICD). The author was able to access these data (hereafter called IICD M&E data)[1] from the last four rounds of Learning Circles and use them for a secondary analysis. Therefore, IICD's evaluation method is described at this point as well. The first survey designed by the author was to measure patterns and variability in first-time GTP participants' expectations towards the type of activities that they will be engaged in during the project. The second survey enquired GTP participants' use of ICT as a means of communication with friends. The subsequent chapters will partly back their line of arguments on these data.

There are various structural and organisational restrictions resulting from the context under which the data were collected. It is analysed here which implications may be derived and how they have influenced the design of the surveys. Careful consideration of these factors also helps put into perspective the deductive potential of results which will be analysed later in this part.

4.1.1. Methodological Considerations related to Survey Design

Given the competence- and infrastructure-wise diverse target group, a few restrictions needed to be considered before designing the surveys. Firstly, in order to meet all bandwidth and infrastructure needs and following general recommendations in social research methodology, the design of the surveys kept to low technical standards. [Atteslander, 2006: 148]

[1] The complete data can be found in appendix in the file `iicd_students_survey.csv` of the electronic distribution of this thesis or are available from the author upon request.

Surveys were thus pre-tested using various types and versions of browsers. The layout was kept easy, avoiding flash animations or resource-intensive elements. Due to the infrastructural particularities of some schools, such as proxy servers, certain settings had to be adjusted. It was not possible to provide the user with the functionality to cache results as this would have required each participant to access the survey with a separate IP address. Yet, in many schools students share computers thus do not access the survey under individual IP addresses. DeVaus underlines the importance of ensuring unauthorised access and anonymity. [de Vaus, 2001: 140] However, ensuring participation only by relevant users (GTP participants), and anonymity at the same time (e.g. by distributing randomized passwords or personal log-ins) were subject to the same infrastructural restrictions. Thus, anyone who knew the survey URL was able to complete it. Therefore, results need to be considered with the limitation that non-relevant persons might have participated, and thus, distorted the results.

For both surveys, methodological aspects have guided the design process. The decision to conduct the survey in a computer-mediated way should not have posed a considerable bias towards students with low connectivity as GTP is a web-based project and requires participants to be able to access the internet at some point. In one case, students filled questionnaires by hand, and their teacher scanned and emailed them to the author. Diversity in terms of age and competences (language and formal educational level) affected the survey design. Uncertainty about theparticipant's comprehension of questions due to the lack of possibilities to ask clarifying questions is often mentioned as a disadvantage of online surveys in methodology literature. [Atteslander, 2006: 148] Therefore, simple and clear language should be used for question and answer formulation. [de Vaus, 2001: 97] Yet, the chance of misunderstandings increases as the participants vary considerably in language proficiency. Given the number of participating countries, it was not feasible to provide the surveys in each participants' mother tongue. An effort has been made by offering them into the three main languages used in Learning Circles (English, French and Spanish). This translation was supported by IICD who commissioned native-speaker translators. However, there is still a chance that students might not understand each question, especially if they are in their first years of language learning. Therefore, simple language was used, and — where the language allowed this — participants were addressed in informal form, so as to appeal to the young target group. (e.g. What software on your computer or mobile device do you use to communicate with your friends when you are online? instead of What client-based internet communication software do you use?] A further source of potential bias may be students' inclination to comply with their teachers' view when being asked to complete surveys during class time. It is assumed that this tendency diminishes if questionnaires are answered online without the possibility of tracing individual answers. Moreover, making an internet survey attractive to look at, logical in structure, and easy to use may help gain cooperation and increase response rates. Also mentioning "[...] sponsorship from reputable institutions" contributes towards this goal. [ibid.: 140] Therefore, the page layout was customized to match the GTP project colours, a GTP and an IICD logo were added, and logical ordering

of questions was carefully considered. Adding conditions to the question order logic allowed users to skip non-relevant questions.

Mann & Stewart [2000] assert that participants are more inclined to contribute to a study if they understand that their answers are worthwhile because they contribute towards a goal which is equally important to them. [Mann & Stewart, 2000: 207] If participants are made to feel valued, they are more inclined to provide the necessary data. Therefore, the students were told in the introductory text that their participation contributes to the improvement of the Global Teenager Project. Methodologists' recommendations to indicate the time required for completion as well as the aim of the study and to provide a contact to the researcher in order make the survey more trustworthy were followed. [de Vaus [2001: 60], Mann & Stewart [2000: 40]]

Figure 4.1.: Screenshot of the first survey's French welcome screen

For both surveys, the open-source administration software for computer-mediated surveys *Limesurvey* was used.[2] The software was installed and set up on the author's server, allowing for maximum flexibility in translations and visual design alterations. With Limesurvey, researchers can create self-administrated online surveys and store results in a database in a custom location. Unfortunately, the software does not provide elaborated data manipulation, analysis or graphic features, although data may be exported to various file formats.

Finally, wording and selection of questions and answer alternatives were checked for relevance, technical terms, ambiguities and dangling alternatives as suggested by De Vaus. Also, leading or negative questions were avoided. [de Vaus, 2001: 97]

[2] Cf. http://www.limesurvey.org

First Survey — Methodology

The first survey aimed at determining GTP participants' expectations towards the type of communication activities carried out throughout the project. It was sent out during the first week of the September 2009 Learning Circles to first-time participants in order to avoid bias because of previous GTP experiences. Results are discussed in chapter 4.4. The complete questionnaire can be found in appendix 6.3.

Out of the six questions, the first two measured expectations, whereas the remaining three enquired about personal data. The first task presented participants with five items representing activities as a function of three factors:

1. Different levels of interaction (one- vs. bi-directional)
2. Direction of information flow (receiving vs. submitting)
3. Quality of the information (personal vs. thematic).

It is assumed that students are conscious about the type factors involved in each activity, although the same restrictions related to intersubjective comprehension described above apply.

Students were asked to rank the five items derived from the combination of factors according to their preferences. Indications could then be derived from the activities which students selected as their most or least common activities relative to the rest. It is assumed that these are the activities which are (least) preferred by participants and which should be included (avoided) as part of GTP in order to appeal to students.

The second question asked students to state additional activities which they might like to engage in during GTP. This allowed a qualitative insight into additional activities not considered by the response alternatives of the first ranking question. Here, all nationalities' suggestions were included and weighted equally as the intention was to gain a broad range of additional ideas. [de Vaus, 2001: 90] A categorization of answers into inductively generated categories allowed the quantification and thus ranking of recurrent activities.

The last four questions enquired participants' age, gender, language of their Learning Circle, and country of origin in order to be able to identify variations due to unequal distributions and thus determine possible variations related to these factors.

Sampling

The aim of the survey was to question an acceptable number of GTP participants in order to gain an insight whether there are variations in GTP participants' expectations in relation to these activities, and whether these variations differ by country. It was not aimed at generalising findings to a wider population (e.g. all students in GTP countries enrolled in secondary education). The process of sampling posed a challenge as GTP participants

are spread across the world, a fact which increases variability in cultural influences and institutional settings; making the sample extremely inhomogeneous. Moreover, since precise statistics of students in all countries are too costly to acquire, a probability sampling method could not be applied. [de Vaus, 2001: 71] Due to organisational reasons, the determination of the sampling frame was directed by the authors' personal connection to country coordinators in 14 GTP countries on five continents.[3] This represents less than half of the countries currently taking part in GTP (33).

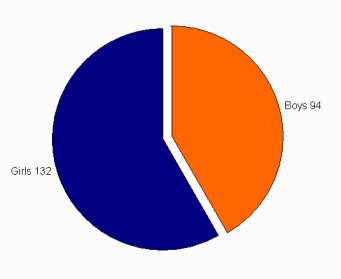

Figure 4.2.: Distribution of first survey responses by gender

It is assumed that national culture considerably affects communication styles and thus, preferences. (cf. chapter 3.2.1) Therefore, it can be expected that the sample is biased towards those countries not taking part. Therefore, results will only apply to this sample. In order to ensure equal weighting of responses among those who did take part, answers from each country were calculated to have the same weight. [de Vaus, 2001: 85] The variable gender was not weighted as it is assumed that, in some countries, there is an unequal distribution of girls and boys in schools. Therefore, an equal weighting would have distorted a variability in the sample population. For analysing the results of the first question, countries with less than five answers were not considered.

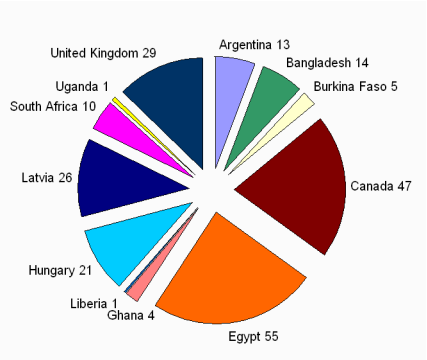

Figure 4.3.: Distribition of first survey responses by country

A total of 244 responses were collected during the first survey, out of which 18 were not completely filled. This resulted in a final sample of 226 responses. The distribution of

[3] Senegal, South Africa, Argentina, Ghana, Egypt, Burkina Faso, Canada, Romania, Zambia, Latvia, United Kingdom, Bangladesh, The Netherlands, Hungary

answers across countries, gender, age and type of Learning Circle is visualized in figures 4.2, 4.3 and 4.4.

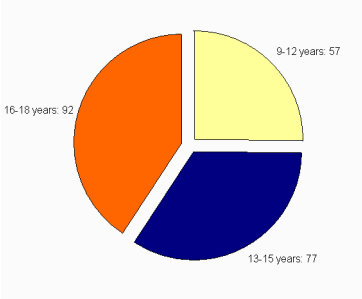

Figure 4.4.: Distribution of first survey responses by age

Second Survey — Methodology

The second survey was send out during the last part of the September 2009 Learning Circle (beginning of December 2009) in an attempt to enquire variables of students' online communication with their friends. Results are discussed in chapter 4.6 and the questionnaire may be found in appendix 6.3. The first part asked for personal details (age, country, first language, Learning Circle language). Contrary to common recommendation, it was decided to move this part to the beginning because in some cases, the survey only consisted of one question related to the research topic (if no communication device is used). If personal data are asked after one question only, the author assumes that students might suspect a mistake and drop out without completing the last part. The second part dealt with access and hardware, questioning the type of devices used as well as access possibilities, frequency of use and access locations. The results can be used as an indicator for the technological complexity of the additional communication software to be suggested. For instance, if a majority is not allowed to install their own software, the suggestion will have to look at web-based solutions. The third part aimed at determining the types of client-based communication software used, whereas the fourth included questions on web-based communication software and preferences related to more specific features. Again, answers will help to to determine which communication functions to include in the suggestion.

In order to ensure that only relevant questions were presented, a question logic was implemented. For example, a person who indicated that he never uses a computer for communication with friends was not asked further questions related to computer software or hardware. Therefore, for some respondants, the survey only consisted of as little as five questions. A further means of appropriating the survey to participants is that of dynamically piping responses from one question into later ones. For example, respondents first indicated their main locations of computer use from a list. These answers were used at a later question on the frequency of use at these locations.

Sampling

Sampling procedure for the second survey was identical to that of the first survey. The same country coordinators were contacted and asked to forward the link to teachers. This resulted in a higher number of total responses (332 in the second survey versus 244 in the first survey). Again, a non-probabilistic sampling strategy allowed the author to gain ideas on the variety of software and hardware used without claiming a wider generalisation.

Respondents' Profile

There were 332 total answers, out of which 51 were not completely filled, leaving a sample of 281 answers. The high number of non-responses might indicate that participants had difficulties with the survey's length, with the wording of questions or with technical issues. [de Vaus, 2001: 97] The author attributes most of the dropouts to language comprehension issues due to the partly young sample frame and low second language capacity. The distribution of answers across age levels, countries, gender and language of Learning Circle is visualized in 4.5 and 4.6.

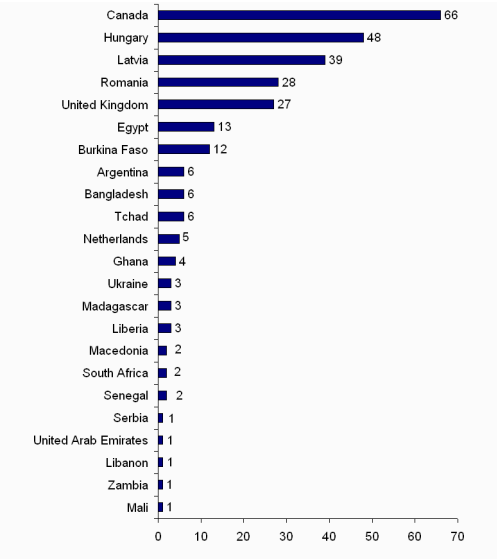

Figure 4.5.: Distribution of second survey responses by country

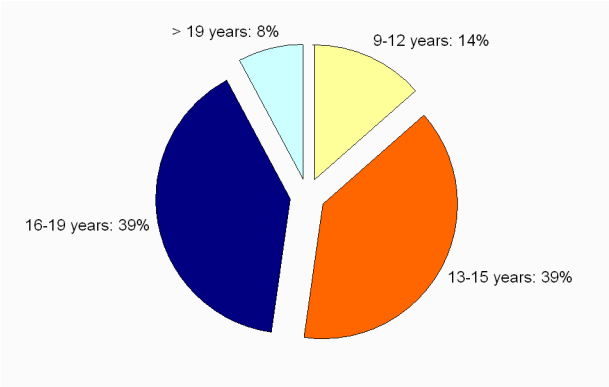

Figure 4.6.: Distribution of second survey responses by age

The title and several notes throughout the introduction as well as in questions indicated clearly that the survey was aimed at GTP students, who are all in secondary education. Yet, 22 respondents indicated an age higher than 20. One explanation might be that students indicated a false age on purpose.[4] Another one might be that teachers have tried the survey before asking their students to complete it. The first case would mean that by falsifying their age (and possibly further details), students purposefully distort results; whereas in the second case, validity of the survey would be affected since it would not measure students' online communication anymore. Therefore, answers from respondents indicating to be older than 20 years were not considered for analysis.

Restrictions

During the design of the second survey, questions and response alternatives partly borrow from studies presented by Schulmeister [2008] who compared 46 studies on students' media and computer use. Out of those 46 studies, 10 were conducted in Germany, 13 in the United Kingdom, 16 in the USA, two in Austria, two in Canada, one in Australia and one looked at several countries in the European Union. [Schulmeister, 2008: 40] Not one investigated media use in Asia, South America, or in developing countries. This might be due to Schulmeister's personal selection, focussing on the discussion of the concept of the Net Generation — a phenomenon naturally claimed to emerge in technologically developed countries. The author suspects that the selection of studies might however also be a result of media studies' initiators' lack of interest to invest in research in countries where the average users' financial budget promises a lower return on investment. In contrast to the present study, studies reviewed by Schulmeister investigated media and computer use in general; whereas the aim of the present study is to look at students' communication behaviour between friends and access to ICTs. Therefore, separate questions were developed, even though reusing an existing study's proofed catalogue of questions and items could have increased validity. [de Vaus, 2001: 50]

Further Limitations

When interpreting results, it should be noted that, due to cultural diversity of GTP participants, differing interpretations of questions' meaning cannot be avoided. Especially the concept of friends and "making friends" are crucial , given that values, norms and the nature of interpersonal relationships are likely to differ not only across individuals, but also considerably across cultures. [cf. Gudykunst [2003: 327] and Keller [2004]] Adams & Plaut [2003] conducted a study investigating differences in friendship conception between Ghanaian and US-American participants. Their results indicate that cross-cultural friendship concepts do differ in the variables of motivation, degree, subjective evaluation and development. In contrast to US-American participants' emphasise on personal independence,

[4] "[...] when participants [...] exploit the virtuality of the medium to experiment with the presentation of the self" [Mann & Stewart, 2000: 208] This is known as disembodiment

Ghanaians were believed to intuitively follow a relational construction of reality, leading to "[...]interdependent construals of self." [Adams & Plaut, 2003: 334] This means that "[...] people experience themselves as interdependent not only with other people, but also with land, spiritual forces, and a sense of built-in order." [ibid.] Therefore, according to Adams, Ghanaian friendships evolve from a relatively fixed pool of people, expectations towards friends commonly include material support and a large number of friends is associated with high obligations as a source of stress. All these factors contrast with US-American conception of friendship.

This leads to the question whether there is a significant variability in participants' interpretation of response alternatives used in surveys 1 and 2. Drawing on the study described above, the idea of making friends is not a universally agreed-upon concept across cultures. However, the idea of connecting people through social networks was, just as the Internet itself, a US-American invention. According to Boyd & Ellison [2007], the four earliest social network sites were *SixDegrees.com* (launched in 1997), *LiveJournal*, *AsianVenue*, and emphBlackPlanet (all launched in 1999); though focussing on different social and ethnic groups, they are all based in the USA. Only during the early years of the 21st century non-US-American social network sites appeared on the web (*LunarStorm* (Sweden) in 2000, *Cyworld* (Korea) in 2001, *Skyblog* (France) in 2002, and *OpenBC* in 2003). [Boyd & Ellison, 2007], This development suggests that also countries outside of the USA have adopted the concept of making friends in a more flexible manner, allowing the selection of friends from a less clearly determined pool of people. Further studies would be needed to investigate the quality of cross-cultural online friendships in a variety of social networks. However, given this cultural variety, it is argued that different cultures have appropriated the US-American-founded online conception of friendship to their own. As a result, students who answer the surveys are likely to project this less obliging conception of online friendship to the survey question, as the enquiry itself is embedded in an online context.

4.1.2. IICD Monitoring&Evaluation Data

IICD conducts an evaluation after each Learning Circle evaluating participants' (students as well as teachers) user profile, satisfaction, and general experience after having completed the project. Facilitators will request participating classes in their last weekly newsletter to fill in the survey. In order to take into account schools with low connectivity or no access to computer infrastructure, filling the survey is possible offline (word version) as well as online (html forms). Teachers have found various ways of forwarding the results, e.g. scanning and emailing manually filled pages or typing answers of their students centrally. The data gained are collected by the Monitoring&Evaluation department of IICD in order to measure the programme's perceived impact on participants, to monitor developments over time and to be able to adjust its structure.

Limitations

Considering the total number of participants, response rate is low.[5] Due to the low transaction costs of filling an online survey — compared to e.g. scanning and emailing it, it should be expected that responses will mainly come from schools in countries with good connectivity , and where ICTs have been a common means of communication also in formal contexts for over a decade. This way, students can be expected to be highly internet-experienced. As for the IICD M&E students' surveys, this assumption is not manifested in response quota. For the spring 2009 Learning Circle, most responses came from Latvia (96), followed by Ghana (95) and Bolivia (66). If the UN's Human Development Index (HDI) is to be taken as a measurement to relate the level of computer literacy of a country's population, Latvia (ranked 48), Bolivia (ranked 113) and Ghana (ranked 58) score well behind countries with much lower response rates (e.g. The Netherlands, with only 14 responses, ranked 6 in the HDI). [United Nations Development Programme, 2009] The author's pre- and post survey do reflect this assumption. The highest number of answers were received from Canada, ranked number four in the HDI.

4.2. Deriving Software Criteria from a theoretical Perspective

The first part of this study investigated relevant literature to present an overview on theories from the fields of pedagogy, psychology, (intercultural) communication and media studies and the emerging and interdisciplinary fields of computer-mediated communication and computer-supported cooperative learning. The theories and studies presented gave a suitable framework for contextualizing the Global Teenager Project theoretically. Next to the fact that the main concept and set-up of the GTP have generally been supported by theories (e.g. the degree of facilitation throughout GTP Learning Circles goes in line with findings in recent pedagogical studies investigating the effects of teaching presence and different degrees of facilitation on different types of cognitive and meta-learning skills (cf. chapter 3.1.4), there have also been indications for further development potentials. Together with indications derived from identifying students' online communication preferences and analysing goal achievement, development potentials hold promise for an improvement in inter-classroom communication, especially when considering GTP's intercultural setting. These indications are elaborated in this chapter.

In GTP, manifestation of communication which could be analysed are textual communication artefacts in the form of N:N (or group-to-group) Wiki postings or email messages. Since the pre-defined phases determine the type of message that is to be posted at a particular point during the project, the content of these messages is either

[5] 325 *individual student answers* were received for the spring 2009 Learning Circle (refer to the `iicd_students_survey.csv` on this distribution or enquire data from the author) as opposed to a total number of around 200 participating *groups* per year

1. A question on the Learning Circle theme
2. A more or less elaborated answer to the questions of other classes, possibly containing pictures
3. A summary of other participants' answers to their own question
4. A hello or good-bye message

(cf. chapter 2.5 for a more detailed description of phases]

The outcome of a Learning Circle can therefore be characterized more by a collection of individual classes' views on a Learning Circle theme rather than by intercultural group-discussions on these views. The last phase of a Learning Circle is reserved for each class to create a summary of all answers submitted to their questions. It is argued here that critical reflection might have taken place within classes during the creation of the summary where contributions are evaluated and discussed, but there is no space set aside by GTP specifically for interaction across classes to discuss their views. (cf. chapter 4) This assumption is combined with a review of two theories which had been discussed in more detail earlier, allowing the author to deduce indications for characteristics of a potential software to enhance this communication.

4.2.1. Implications from Learning Theories

The first chapter has provided theoretical cues towards considerations in online learning environments when aiming at learning outcomes such as those set by GTP. It has been proposed that in order to develop meta-learning skills (e.g. cooperative work or knowledge management strategies) through an online collaboration project, the instructional design of the project should, among other points,

- Comply with the need for different types of interaction, since learning is considered as being based in social context
- Give opportunities for autonomous learning
- Allow a more equal distribution of roles and responsibilities between teachers and students compared to traditional hierarchical structures
- Make use of (knowledge as well as people) networks so as to support interdisciplinary, multi-perspective, hypertextual, non-linear learning (cf. chapter 3.1)

It has been elaborated to what extent these factors are already being considered by current GTP practice. Yet, it is claimed at this point that, with regard to making the most out of the apparent diversity among GTP participants, further interaction between the participants could enhance students activities towards truly networked and multi-perspective learning.

4.2.2. Higher-order Learning and Critical Thinking

It is claimed here that, at no point during the computer-mediated communication during a GTP Learning Circle, cross-cultural, two-way interaction on the Learning Circle topic is encouraged or facilitated. Intra-classroom communication has certainly taken place in most cases in order to develop a question or an answer which is sent out in the name of an entire class and therefore reflects and shapes the image of this group in the eyes of the other participants. Yet, a critical reflection of e.g. an answer submission, if it takes place, is done unilateral within a classroom.[6]

One of GTP's goals is Foster problem solving and critical thinking skills. This may be equalled to higher order thinking, and during the process of its development, higher-order learning. Garrison et al. [1999] provide a framework that allows the assessment of these skills' representation in an online conversation. Just as most research investigating different levels of learning and thinking in an online context, Garrison et al. [1999] also build on two-way discussions. Here, threads of messages consist of an interchange of ideas with a visible interactive, reciprocal discourse, and consequently under certain conditions, cognitive presence. [e.g. Garrison et al. [2001], Meyer [2004] and Soller [2001]] This construct rates open communication with a notion of mutual awareness most necessary for exhibiting social presence and respect as well as appreciation for others' thoughts and contributions. This willingness to maintain and prolong contact is considered a key factor in well functioning communities of inquiry. [Garrison et al., 1999: 100]

Combining this observation with the notion of the lack of visible interaction in online contributions described in the previous paragraph leads to the conclusion that higher-order learning or critical thinking, in the sense of the model of practical inquiry by Garrison et al. [1999] (cf. chapter 3.5), applied to online communication by Meyer [2004]), if it does occur among GTP participants, it cannot be the result of written web-based inter-classroom CMC, but more that of discussions within their own group.

4.2.3. Meta-Learning Communication Skills

Next to higher-order learning and critical thinking skills, the development of meta-learning communication skills, such as effective and appropriate group communication (e.g. awareness of online communication conventions, such as the 'Netiquette', learn how to work cooperatively in a team), is one of GTP's goals. Soller [2001] postulates that "[. . . elements of collaboration[. . . " and "[. . . active learners in supportive teams[. . . " Soller [2001] are essential for the development of these types of meta-level communication skills.

[6] This hypothesis would have to be verified of course by an empirical study [e.g. similar to that of Meyer [2004]] investigating types of thinking levels visible in students' online contributions. A systematic content analysis of wiki or email postings would give a more valid, and scientifically sound insight into the type of communication and interaction taking place between classes. This was not possible within the scope of this thesis. A further discussion on possible extensions of this study is done in chapter 6.3.

> "Skill [*sic*] in learning collaboratively means knowing when and how to question, inform, and motivate one's team mates, knowing how to mediate and facilitate conversation, and knowing how to deal with conflicting opinions. [...]" [ibid.]

If a Learning Circle is to be considered a team, collaborative learning according to this definition only takes place in sub-teams inside classrooms. It is argued that the GTP sub-goal *Learn how to work co-operatively with partners in distant locations*[7] is not accomplished in the sense of Soller. Based on several studies, she proposes a *Learning and Conversation Skills* taxonomy and identifies three main conversation skills of Active Learning, Conversation and Creative Conflict. She concludes that "The students who benefit most from collaborative learning situations are those who encourage each other to justify their opinions, and articulate and explain their thinking." Soller [2001] These activities might be shown by students during discussions in their own classrooms, but are not encouraged by the current set-up of GPT and are not visible in students' online communication.

> "Active learners ask questions to improve their own or their peers' understanding; they elaborate, clarify, and justify their arguments when prompted to by their peers, and they encourage and motivate their team members." [ibid.]

Again, GTP participants may be active learners in this sense within their classroom — they are less so across classrooms. Consequently, meta-level communication skills, just as higher-order learning skills, will not be the result of the entire multi-cultural Learning Circle team but only that of a mono-cultural class.

4.2.4. Intercultural Awareness

So far, according to theories, higher-order learning, critical thinking and meta-learning communication skills seem to be the result of intra-classroom communication. A third skill which is aimed at by GTP is intercultural awareness. It has been reasoned that intercultural awareness is a result of active engagement in an intercultural situation. (cf. chapter 3.4.1 and Ortuno [1991]). If the process of awareness building is stopped at the point of recognizing differences, and possibly acknowledging their raison d'être, a complete step towards ethnorelativism, and thus positive evaluation of otherness becomes less likely. Relating observations to one's own culture is a further requisite for achieving a higher level of intercultural awareness.

Looking at GTP Learning Circle reality again, and including observations from previous paragraphs, the question arises, if and how this sensitivity is being fostered. It has been pointed out that current GTP design might not provide enough room for feedback or critical discussion across classrooms (and thus, across cultures). If interactivity is limited to posting own statements without having to expect critical feedback, the action of writing becomes

[7] Given that this goal is a subgoal of 'Develop co-operative and collaborative learning strategies', it is assumed here that collaborative, i.e. interactive learning elements are included in this goal

less binding. Additionally, possible misunderstandings will not be brought up for discussion since participants might not become aware of the fact that their mutual perceptions of each other's comprehension do not match.[8] If their own writings are not reflected back to them, interlocutors might mistakenly presume mutual understanding, although a message had been perceived wrongly. This might lead to the creation of stereotypes and false or even negative images of the other.

It is argued therefore that interaction needs to be encouraged so as to help reveal misunderstandings. The following incident provides an example which supports this argument. In a project using email Learning Circles where participants may send private emails and engage in discussions, a US-American studend used the word "Heil" to address the German partner class in an email. Only after vivid exchange of emails could the German class be convinced that the US-Americans were not being ignorant but simply did not know better. Without active inquiry in both directions, the German class would probably have remembered a negative image of this group of US-American students. [Donath & Volkmer, 2000: 308]

Contrary to this view, as could be indicated in the previous chapter, GTP reality suggests a high degree of participant satisfaction and even a high degree of perceived achievement of aims outlined in the first GTP goal: share individual, regional and cultural perspectives. Students across all countries report with overwhelming majority a positive GTP learning experience. Hence, it is to be investigated what type of intercultural awareness is developed if a critical discussion of contributions is not encouraged.

The following items are open answers of GTP participants to the question "Can you explain why you have achieved your goals?" in the IICD GTP M&E survey.[9]

> "I got to know other people's culture...I really like to explore new points of view and I think that this project gave mie this..thank for all of you." Respondent's ID29521
>
> "I had understood other cultures, and I had understood my own culture better." Respondent's ID29517
>
> "Answering questions of other participants, I had to think, learn a lot of new about culture of my country, to study English. Having received answers to our questions, I have learnt a lot of new about culture of other countries." Respondent's ID 39335

All of these answers suggest either a positive attitude towards the newly-acquired insight into other cultures or a critical reflection of the participant's own culture with a clear causal link to their participation at GTP. Both of these attitudes are important elements of the intercultural awareness construct described earlier. This indicates that there seems to be at

[8] The challenges involved in intercultural face-to-face communication have been outlined in chapter 3.2

[9] please refer to the file `iicd_students_survey.csv` of this distribution for the original data or enquire them from the author

least some evidence pointing towards the development of a degree of intercultural awareness. It is assumed that the reason for this may be that, by having to answer questions of others, students are forced to think about their own culture, realizing that 'normal' is relative and 'better' or 'worse' are not attributes of cultures.

It is concluded that the degree and quality of intercultural awareness achieved by GTP participants may be improved and possibly sustained if interaction is not limited to looking at each other's opinions anymore, but expanded to critical discussion and reflection.

4.2.5. Conclusion

Essentially, assuming that the theories and their implications relied upon throughout this study provide an appropriate framework, the application of CSCL theories suggests a need for an additional two-way communication component. Therefore it is concluded that an interactive, mutual and social awareness-fostering software may

- Support higher-order learning and the development of critical thinking skills
- Support meta-learning communication skills
- Help to improve the quality and extent of intercultural awareness developed by GTP participants, possibly even taking a step further towards intercultural competence

As a result of the postulations in this chapter, theoretically implied requirements for software aimed at enhancing the potential for intercultural communication may be stated by recalling theories discussed in previous chapters. Since it has been suggested that appropriation of software depends on social as well as cultural norms, a communication software cannot be the result of rational choice of the entire user group; a scenario unrealistic considering the inhomogeneous structure of GTP participants in terms of culture, age group, etc. [Cf. rational media choice theory, Döring [2003: 142] or Griesbaum [2006: 38]] Furthermore, it has been proposed that an interculturally diverse user group is likely to have varying norms of expressing appropriate and effective communicative behaviour — a concept closely related to intercultural competence. If the basis for developing intercultural competence, intercultural awareness is to be fostered, differences in communication styles need to be provided for. Otherwise, misunderstandings might not only be left unresolved, but possibly even augmented.

Therefore, a decision for an additional communication component needs to be taken centrally, while carefully considering the challenges elaborated throughout this chapter. Further requirement criteria considering students' preferences will be elaborated throughout the following chapters. (cf. chapter 5.1)

4.3. Present Shortcomings

The first part of this chapter investigated frameworks which helped embed the GTP theoretically. Implications from these approaches will be drawn in a later chapter. First, present challenges faced by the project are stated here.

4.3.1. GTP Students' use of Computers

Firstly, looking at IICD M&E GTP survey data[10], the level of students' computer use may be evaluated. Students were asked the question: In what way did you work on the Learning Circles?The choice of possible answers included:

1. Talking in the classroom (oral)
2. Writing in the classroom (written)
3. Behind a computer (electronic)

Overall answers from students result in 70.0% stating to use the computer. This means that, on average, 30.0% never used the computer during their project, but assumingly participated only by using pen and paper or in oral classroom discussions.[11] This rate seems high considering one of the main objectives in GTP is "Learn to use Telecommunications Technology" There are, however, variations across countries. From 100% who claim to have used the computer (Egypt, Senegal, Romania; spring 2009) until 42% (Ukraine). Adding to this assumption, only 96 out of 799 students (12%) who provided an answer to the question "Can you explain why you have achieved your goal?" answered in the category of Learn to use Telecommunications Technology (cf. chapter 4.5) Of course, this does not proof that there are not more who have increased their ICT competences since this was only a subjective self-evaluation in the form of an optional, open-ended question. It might have also discriminated against less talkative or language proficient participants. [de Vaus, 2001: 99] Also refer to chapter 4.1.1 for more deliberations on survey limitations. However, it suggests that other experiences during the project were rated more important by participants (e.g. make friends or learn about another culture).

Which are the reasons that could account for these observations suggesting only a partial application of computer technology in this web-based project? Intuitively, one might think

[10] The complete IICD M&E survey data can be found in file `iicd_students_survey.csv` of the electronic distribution of this study or is available from the author upon request.

[11] Interesting to note is the difference between the answer of students and that of the teachers to this question. Teachers reported in 76.1% of all cases that students had used computers themselves for the learning circles and 14.9% gave no answer (8% said no). The inclination of teachers not to give a negative answer may be attributed to the social desirability effect which causes respondents to answer in a way that conforms to perceived interviewers' norms and values. [de Vaus, 2001: 107] In this case, teachers might be aware that a goal of GTP is to increase computer literacy and that it is the teachers' duty to encourage students to use computers themselves. This might cause them to overstate or rather not give an answer if left a choice. Therefore, the conservative values derived from students' answers are used for argumentation.

of the lack of infrastructure i.e. low connectivity or only few computers per school or class. This is however not the case as the IICD survey data suggests that a good proportion of teachers (79.4%) report that their school has either computers in every class room (7.5%) or in a special computer classroom within the school (61.9%). Also, 84.8% of those teachers whose classes had used computers themselves during the Learning Circle, stated that a maximum number of three students had to share a computer.

Also students' answers in the second survey suggest that the great majority accesses a computer for the purpose of communication with friends (80% overall, with significant variation between continents) Almost all out of those who do use the computer do so at least once a week (221 out of 224; independent of the location selected). Again, variations across continents are considerable. (cf. chapter 4.6)

Contrary to first thought — and in line with the reasoning of the last chapters — it is argued that a lack of visible reciprocal interaction is not due to infrastructural challenges that schools and students are facing. However, the relatively high rate of computer users does not indicate yet what type of activity they were involved in. If true group interaction is aimed at, it needs to be analysed who actually carries out postings and sends out emails.

4.3.2. GTP Students' Use of the Internet for Project Communication

It has been reported by country coordinators that often, it is the teachers who type and post messages.[12] If this assumption is true, a part of the GTP students do not get involved in direct communication but rather receive communication artefacts on paper indirectly. These artefacts will have been read, prepared and filtered by the teacher who thus acts as an intermediary. Further, as has been observed, direct one-on-one communication does not take place in most cases.[13]

The IICD report monitors schools' Internet access over time:

> "79% of teachers claim that all computers are connected to the internet (70% last year). Interesting, even between LCs you can see an increase in schools having access to the internet, in the 2009 LC more than 85% of the schools had access, versus 70% of the 2008 LC schools. 16% (19% last year) does not have any computers connected to the internet and has to move to another location to connect. The percentage of schools that do not have access to internet [*sic*]

[12] One country coordinator reported a teacher from his country who walked several kilometers every weekend to the next public internet location in order to post his classes contributions

[13] Experiences made with a chat room (web-based, synchronous N:N text-based chat, implementation of the Drupal module BoWoB [BoWoB, 2009] used during two Learning Circles lead to the decision to not continue. As a country coordinator reports, there were technical (access problems), pedagogical (discussions were not facilitated which lead to meaningless communication or students using dirty talk) and organisational challenges (different time zones) related to using the chat. Also cf. chapter 5.1.

> seems to decrease over time. 5% of teachers indicate that their school has a dail-up connection."[14]

It is thus noted that reasons for low visible student-to-student interactivity lie mainly outside of infrastructural restrictions. The following are merely presumptions of the author: Coordinating a class of, on average, 25-80 students in the use of a medium, the teacher is not confident in using him- or herself might pose a problem. Teachers might also be unsure about risks and dangers involved in the use of the internet, causing them to try and keep the students' online interaction within a limited range. Moreover, while trying to comply with the GTP requirements for posting contributions in a certain format, containing the relevant content and within the specified deadline, teachers will try and keep the task of delivery (thus, the posting or emailing of the message as the main communication act) within their own responsibility. Therefore, it is argued that low reciprocal student online inter-classroom communication may be a consequence of the current GTP structure which does not encourage two-way interaction between schools. (also compare chapter 4.3.3)

4.3.3. Conclusion

A rate around 70% in computer use is not ideal, especially when compared to the overarching goals of GTP. However, this number still represents the great majority. Participants in the 30% non-computer-use group might still reach other goals. Nevertheless, there is room for improvement on this ratio. When evaluating the possible reasons for the apparent shortcomings in terms of use of computers for both, general information processing as well as internet communication, it becomes clear that some of this is due to the pre-determined GTP structure as well as institutional and infrastructural conditions within schools. Infrastructure can be adapted to needs, whereas with the current GTP set-up including requirements and overall process, teachers might still find it easier to have students develop questions, answers and summaries offline and in groups before posting the outcome online by themselves. This is why the procedure of indirect message conveying has worked well in the past and should not be considered negative per se. Therefore, the author does not opt for a change at this point, but rather for providing the students with an additional opportunity for independent and self-initiated communication with Learning Circle partners as an addition to the established structures of GTP. This should result in an increase of students' internal motivation to use ICTs and lead to a higher percentage of participants indicating they have used computers during a GTP Learning Circle.

It is therefore assumed that incentives might trigger students' curiosity and desire to make use of ICTs for education and communication purposes. This in turn may lead to an increase of students' need for adequate ICT infrastructure, making it easier and more

[14] Please see the file `iicd_teachers_survey_report.pdf` for the written IICD report

plausible for educational stakeholders to press the demand for better ICT equipment in schools.

Initially, at this point, a logfile analysis was planned in order to underline the fact that only a few users — presumably teachers — access and actively use the GTP means of communication. (cf. chapter 2.4) After careful consideration, this was not rated appropriate for several reasons. According to Pape, logfile analysis serve two main purposes: firstly, gaining insight on a single user's behaviour and secondly, learning about the average user's preferences within a certain web-service. [Pape, Janneck, & Klein, 2004] He further mentions the identification of types of users; patterns, regularities, frequencies and priorities of use. During a GTP web-based communication, be it wiki or email-based, single user identification by IP address is not possible since GTP does not provide separate log-ins for the wiki websites (or dgroups email addresses respectively) for teachers and students. Additionally, the use of a proxy server is common in educational institutions in order to prevent students from accessing potentially harmful websites. Proxy technology distorts the allocation of IP addresses (and therefore identification based on IP- addresses) even further by establishing a connection using its own IP address. Therefore, a conclusion from logfile data aimed at identifying access patterns of individual teachers or students cannot be drawn. Even a distinction in two groups would not be possible. When using logfiles for user behaviour analysis, it is presumed that user behaviour is guided only by personal, self-initiated and independent motivation. This is however not the case for GTP. Here, the outcome of each phase of a LC is published at a specific location. As has been argued in the previous chapters, there is little motivation for free exploration.

4.4. Students' Expectations towards GTP (First Survey)

Previous chapters have analysed practical implications derived from theories discussed in the first part of the present study, as well as development potentials resulting from current GTP practice. It has been found that there is a need for adding an interactive communication component to the GTP which may improve the level of students'intercultural awareness and foster the development of higher-order learning and critical thinking skills. At this point, target values for a communication software are drawn from students' expectations towards GTP activities which were enquired during the first survey as a method for developing criteria for a final software selection. Results indicate which type of activities students are motivated for and which type of activities might require more substantial facilitation. Methodological considerations discussed in chapter 4.1 are considered when interpreting results. Further indications from students' point of view may be derived by exploring the IICD M&E data for more insights into students' preferences.

4.4.1. Investigating Preferences in interaction Types

The ranking of the first survey task allowed insights into students' relative preferences in terms of interactive elements (one- vs. bi-directional communication, receiving vs. submitting information, and personal (subjective) vs. thematic (objective) topic discussion). The following list demonstrates the relation between items and interactive elements. Further combinations are imaginable but not considered to contribute any substantially different aspects. (e.g. one-directional personal publishing of information could be a diary; an element not explicitly included in the GTP phases)

- Learn about other cultures — mainly one-directional receiving and processing of information on the other group
- Tell people from other cultures what I think — mainly one-directional submitting of information on a theme
- Chat with people from other cultures — bi-directional exchange of shallow information
- Make friends with people from different cultures during the Learning circle — bi-directional exchange of personal information
- Find out what people from other cultures think about our theme — mainly one-directional receiving of information on a theme

4.4.2. First Survey - Results

As outlined in chapter 4.1, only countries with more than five answers were considered in the analysis, hence Ghana, Uganda, and Liberia were excluded. Each set of bars represents a country's proportional preference in relation to activities. As pointed out earlier, students' nationality is likely to influence their preferences in communication style. Therefore, this weighting of answers ensures that each country is represented equally. The last set shows the arithmetic mean over all countries. The first and last rank were selected for analysis as the extremes best indicate tendencies in student's preferences. It can be noted that for both ranks, there is an uneven distribution of preferences across countries. Least liked activities are on average spread equally, whereas there is a greater distribution of answers across average preferred categories. For analysis, it is especially interesting to consider if all countries or only few have mentioned activities on both extrema. The mean value does not indicate if only a few have ranked this activity high (or low respectively). Ignoring this would lead to a wrong conclusion, possibly ignoring the preferences or dislikes of one or many countries.

On average, the two highest-ranked activities are *Learn about other cultures* (35.55%) and *Make friends* (29.85%). Interestingly, Bangladesh is the only country with votes in only one top-ranked activity (0% for *Make friends*). The two top activities are also the only

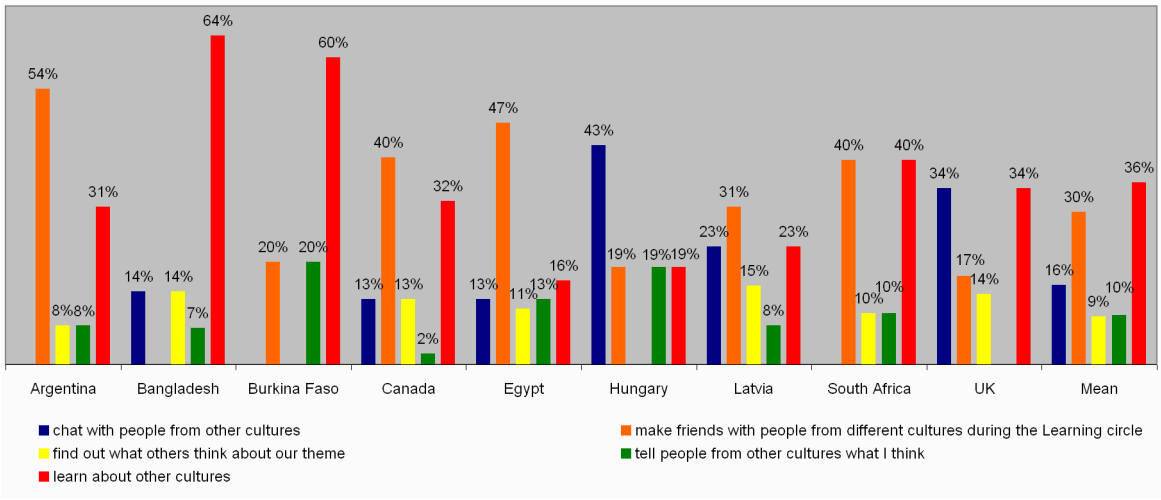

Figure 4.7.: Total times an activity was ranked in first position by country

two which at least one respondant in all counties ranked first. The other three follow with 15.58% (chat), 9.6% (*Tell people what I think*) and 9.43% (*Find out what others think about the theme*).

Most common activities ranked in the last-position ranking are *Tell people what I think* (30.12%) and *Find out what others think* (21.49%). *Learn about other cultures* (14.94%) and *Make friends* (14.10%) are very closely ranked fourth and fifth in the last-position ranking. This is consistent with these activities' ranking as the first and second most preferred activity in the first-position ranking. Interestingly, *chat* is mentioned by all countries at least once as least liked activity, and a higher proportion indicates chatting as their least liked than as their preferred activity (19.34% vs 15.58%). One reason for this could be negative experiences with the GTP chat in an earlier learning circle (cf. chapter 4.3). However, this tendency should be considered during software selection.

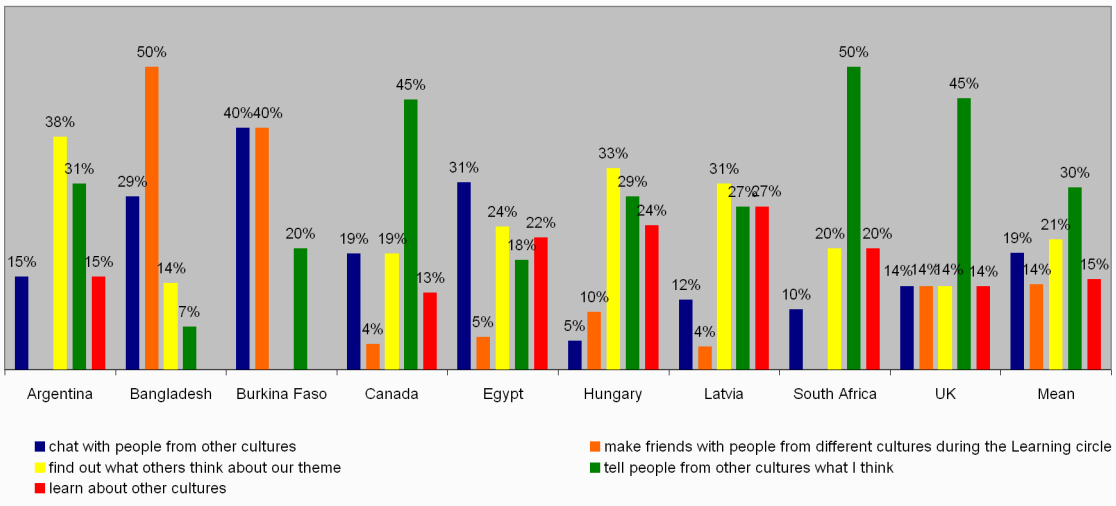

Figure 4.8.: Total times an activity was ranked in last position by country

The greatest discrepancy between preferred and least liked activities is manifested in the answer distribution of *Tell people from other cultures what I think*. Indicating the strongest tendency of all activities, this activity is, on average, ranked second last (with a very small span to the last: 0.17%) in the first position ranking, and first in the last.

The second question of the first survey asked students to state other activities they like when participating in GTP. During data analysis, these answers were placed in inductively derived categories. The distribution outlined in table 4.1 resulted from this categorization.

Category	Total
Learn about theme	22
Teamwork	15
Improve language skills	8
Other	15
Special Learning Circle activities	14
Learn about other cultures	48
Tell people from other cultures what I think	11
Make friends with people from other cultures	16
Find out what other cultures think about own culture	3
Use media	28
Exchange written communication	8
Chat	12
Learn about own culture and oneself	4

Table 4.1.: Categorization of open answers to the question "What other activities do you like when you participate in GTP?"

162 out of 226 respondants contributed to this open question (70%), with some answers containing more than one category. Others were a negation of the question (e.g. six wrote "nothing"). Again, as discussed in chapter 4.1.1, a certain degree of disembodiment is to be expected throughout the answers, with some not taking the survey seriously and misinterpreting the question. This resulted in answers such as "sex" (First survey respondent's ID 24) or "Because my English teacher forced me =D" (First survey respondent's ID 172). It is likely that native speakers were more inclined to answer, thereby possibly increasing the bias towards non-English/French/Spanish-speaking countries. Misunderstanding or differing interpretations of a question seemed to have been a problem in many cases as many answers repeat one of the activities of the ranking question (*Learn about other cultures*, *Make friends*, *Chat*, *Tell others what I think*) whereas the author's aim was to identify additional activities. Others state activities they like doing in general: "I like sports" (First survey respondent's ID 58) Therefore, it is assumed that this question's validity is rather low.

The distribution of open answers across categories indicates a close association of students' preferred activities with the overall GTP goals (cf. chapter 4.5) and corresponds with results of the preceding ranking, where learn about other cultures is also rated highest.

> "When I get to learn about they're culturers and they learn about mine so it's a bit of both of us learning something. :)" (First survey respondent's ID 79)

With respect to the aim of this study, it is interesting that using media is ranked second and some answers expressed the wish for including interactive online communication.

> "may we make project with other and wemake somthing like blog orwebsite or face bookgroup" (First survey respondent's ID 40)

Looking at students' suggestions for improvement in the IICD M&E data provides additional insights. Several students suggest to improve interaction:

> "Although I learnt alot from the students from other countries but we were not able to interact one on one." [IICD M&E respondent's ID 28293]

> "More communication and interaction between learning circle students." [IICD M&E respondent's ID 29569]

> "It would be a good idea if in the next leanring circle we could interract more with people from otrher countries, on a chat or a forum" [IICD M&E respondent's ID 22125]

More concrete statements express the improvement of or wish for a chat system.

> "First of all I would like to say well done, but my problem is with the chat system please I want to emphasise on this it is no... there could be a system or something done about it, it would make it more easy and please work on the chat system. Thank you." [IICD M&E respondent's ID 34646]

> "The chat could be more understanable, because it was really hard to take part in it." [IICD M&E respondant's ID 35719]

> "Puede mejorar si tuviermos mas tiempo y mas personas en el chat." [IICD M&E respondant's ID 22471][15]

On the one hand, this underlines negative experiences made with the GTP chat, and on the other hand it shows that students are aware of the potentials of synchronous communication, if it is administrated and embedded properly.

[15] All data may be found in the file `iicd_students_survey_data.csv` in the electronic version of thesis or is available from the author upon request.

4.4.3. Conclusion

The results of the first survey give two indications for selection of a communication software: Firstly, students' preferences lie more at the level of one-directional reception of potentially interesting information rather than at expressing opinions of their own. This is an interesting observation considering that only if all parties involved in a conversation are willing to contribute will there be an interchange where everyone receives something. Consequently, the bi-directional exchange of ideas is to be encouraged so that students feel motivated to also provide contributions. As has been pointed out earlier, this may be achieved by making online conversation more interactive, personal and flexible so that all sides feel they are an essential part of the whole group.

Secondly, chat activities are rated by some students in all countries as least liked activity. Considering the needs defined in previous chapters, reciprocal interaction had been mentioned as a key development potential. The students' view indicates that this interaction does not necessarily need to be of synchronous nature. By showing students that direct interaction enhances highly liked activities, such as learning about other cultures, they may appreciate its added value. As negative experiences with using synchronous chat demonstrates, this is an activity that requires careful planning, coordination and appropriate software facilitation. Students' suggestions for GTP improvement show that this is partly recognized by students themselves.

4.5. Reviewing GTP's Learning Circle Goals

After having investigated students' expectations, theoretical implementations and development potentials derived from looking at current GTP practice, this chapter will review the internally set GTP goals (cf. chapter 2.3). Comparing students' subjective assessment of individual goal achievement with GTP goal categories is expected to evaluate to which extend GTP goals are accepted by students. It will also give further indications for aspects a communication software may additionally support, thus providing a basis for further criteria that will be employed for software selection. Previous chapters have suggested that it may be that the aspect of intercultural awareness is not addressed appropriately yet by current GTP practice. Therefore, it will be particularly interesting if students feel they have progressed with regard to intercultural awareness.

4.5.1. Mapping the subjective Self-Assessment of Students to GTP Goals

Methodology

As a first step, Students' open answers to the questions *Can you explain why you have achieved your goals?* and *What were your main reasons to participate in the Learning Circle?*

were analysed. Answers were mapped against the five main categories of the GTP goals, and finally their frequencies were compared. This process is expected to provide further answers to the questions if and how GTP goals differ from students' goals.[16] As has been discussed, goals are of normative character and stretched across many aspects. Therefore, mapping students' motivation and goal achievement assessments may only indicate trends. The official GTP goals were presented in chapter 2.3.

It should be noted that response items were only included if there was (1) a positive answer to the goal achievement question and (2) either of the two open questions were answered were included. This yielded a total of 1299 out of 1374 datasets (94.5%). Analysis was conducted until 799 (61.7%) datasets were analysed, making sure that at least 50% of each language were included. At this point, a particular relationship between the goals was clearly visible. Since presentation of datasets was randomized by the RAND()-function of MySQL without seed value[17], further mapping was not expected to reveal a differing relationship.

To facilitate analysis, datasets with their answers were copied into a MySQL database on the author's server and presented one-by-one in a small web application, thus allowing users to match answer sets and main goals.[18] Subgoals were always presented below each dataset for coders' reference. Some answers contained more than one category and coders were instructed to select all categories mentioned. This multiple response method only leads to basic frequency analysis. [de Vaus, 2001: 154] Here, this is also the intended result; further inferential conclusions are not aimed at. In order to increase objectivity, prevent one-sided coding, and spread the chance of consistent coding errors, seven independent coders were asked to conduct coding. Please refer to appendix 6.3 for the coding instructions.

Restrictions

A few additional restrictions need to be considered before analysing results. Firstly, neither the majority of students nor coders were native speakers of the three survey languages (English, French, Spanish). Higher-order thinking tasks such as reflecting one's goal achievement is not only a question of language proficiency, but also one of age, requiring a certain level

[16] Stating reasons for participation does not normally mean that they have also been achieved. Yet, they have been included here because students had been asked whether they had achieved their goals in a previous question. Therefore, it is assumed that these goals correspond to what has actually been achieved and is hence comparable to external goals. The author is aware of the fact that reasons and goal achievement do not always match. However, this had to be accepted for methodological reasons as there was no response alternative "I'm partly satisfied" in the IICD M&E survey — which would have allowed filtering. This discrepancy illustrates the restrictions involved in reusing data for a purpose other than the one they were collected for

[17] Cf. MySQL5.0 reference manual, chapter 11.5.2 mathematical functions, http://dev.mysql.com/doc/refman/5.0/en/mathematical-functions.html#function_rand (accessed: 2009 December 14, 18:16 CET)

[18] A computer scientist helped the author with the programming of this application

of self-reflectiveness. As a result, this might lead to a discrimination against non-survey-language countries as well as young students, hence affecting results.

Further, students have stated goals other which coders could not categorize clearly into either category. Several coders remarked that two of the most frequent answers were "to make friends" and to improve language skills, and that these did not fit in any of the subgoal categories. Therefore, there might have been inconsistencies across coders' decisions.

4.5.2. Discussion of Results

Table 4.2 summarizes the results of the mapping:

Goal	H(Goal)	h(Goal) =H/N	Ratio =H/93
Share Individual, Regional, and Cultural Perspectives	475	0.49	5.11
Enhance Communication Skills	207	0.21	2.23
Foster Problem-Solving and Critical Thinking Skills	98	0.10	1.05
Learn to use Telecommunications Technology	96	0.10	1.03
Develop Co-operative and Collaborative Work Strategies	93	0.10	1.00
Total times a category was mapped from answers = N	969		

Table 4.2.: Results of the mapping ranked by frequency

Due to the multiple answer coding method used, numbers are to be analysed only in relation to each other. The most striking finding certainly is that the first goal is mentioned more than five times more often than the last. 36.7% of all students who gave an answer to one of the two open questions analysed stated that sharing cultural perspectives (often "Learning about other cultures and how people live in those countries." [Respondents' ID 35887] or similar statements) was among their motivation for participation. Considering that previous chapters have attributed to GTP the property of providing an appropriate framework for laying the foundations for developing intercultural awareness, this self-evaluation is not surprising. However, this mapping naturally does not help to identify the quality of this awareness. As has been suggested earlier, intercultural awareness may only be initially facilitated through GTP, but inter-classroom communication is limited so that the resolution of possible intercultural conflicts is currently left to teachers to resolve. Therefore, this high number might indicate indeed that students "learned" something about other cultures (answers commonly do not state they had learned from others) by comparing with their own views what another class has written about a topic, thereby becoming aware of potential differences or similarities. Nevertheless, in order to move from ethnocentrism to ethnorelativism, this basic awareness is only the first step. (cf. chapter 3.4.1)

At second sight, the three low values stick out, especially in relation to the two higher ones. Only around ten percent of all statements included these categories. These are partly goals

which require a high level of self-reflectiveness, as well as those which are not commonly aimed at by students but rather set as normative, pedagogical aims. Answers mapped in these categories include:

"To learn to work in international team and to improve my English and computer skills." [Respondent's ID 22203]

"I learned so many things like research skills and how to introduce myself and how to summarize others' responses." [Respondent's ID 22619]

The relatively low number of answers in the category Learn to use Telecommunications Technology points towards two directions: either, students already possess ICT skills well beyond what is required by GTP — causing them not to state this as something they need to improve — or they were not able to use ICTs to greater extent due to infrastructural challenges such as low connectivity. A deeper look at IICD M&E results gives clearer indications whether students feel they have gained ICT skills through GTP. If infrastructural conditions allow a more extensive use of ICTs will be investigated during the analysis of the second survey results.

In the IICD M&E survey, almost half of the students agreed or completely agreed that they had gained useful computer skills. The rest was neutral (15.9%) or disagreed (partly or completely: 13.2%). These data, together with those discussed in chapter 4.3 (students' computer use during the project is around 70%) indicate that there is considerable potential for improving students' positive experience with ICT during their GTP participation.

4.5.3. Conclusion

This chapter has considered students' motivation for participating in GTP by analysing their self-assessments on reasons for participating and goal achievements. With regard to a communication software as a means for enhancing interaction across classrooms, results indicate that current GTP practice for various reasons only leads to a positive experience with ICTs for half of the participants. Depending on the reasons, a potential software might be able to increase this number if employed in a sensible way which facilitates the most popular objective (share cultural perspectives), thus underlining its added value. It would also need to consider those with restricted access to ICTs e.g. by posing low barriers for those with lower computer literacy skills than others while at the same time remaining attractive for those that have incorporated the Internet into their daily lifes.

A second consideration was that there is a high number of students that expressed their motivation to share cultural perspectives, and particularly learn about other cultures. This is consistent with findings of previous chapters. It has been questioned whether this type of awareness of each other's differences or similarities might not be moved further towards

mutual learning from each other. It is proposed that sustained and facilitated reciprocal interaction in a computer-mediated environment can help move towards this aim. It is essential that a new software provides appropriate ways of making this interaction an attractive activity and which leads to a positive learning experience. Nevertheless, it is not enough to only provide software without embedding it in the projects' structures or without considering participants' communication behaviour. Therefore, the following chapter investigates criteria related to infrastructural and organisational constraints.

4.6. Enquiring Students' Preferences within online Communication (Second Survey)

After having assessed students' preferences and expectations towards activities within GTP, this chapter investigates GTP participants' online communication behaviour outside of the project. This will contribute to the development of further criteria, an additional communication software should meet if it is to be accepted by participants. Infrastructural aspects will be considered as well as current online communication preferences. The author developed the second survey in order to gain information on

1. The typical context of use (access frequency and location)
2. The types of activities preferred by students when they are online
3. Which websites students visit for engaging in social activities when they are online

(cf. chapter 4.1 for more on methodology and possible sources of error.)

This chapter discusses results of this survey and concludes by proposing key points to be considered when selecting a communication software for GTP.

The answer distribution of the second survey is analysed below. Insights may be gained on the context of use: how often, where, and what types of software students use for online communication with their friends. Since answer distribution varies considerably from country to country, continent clusters were created for analysis:

Africa : Burkina Faso, Egypt, Ghana, Liberia, Madagascar, Mali, Senegal, South Africa, Tchad, Zambia

Europe : Hungary, Latvia, Macedonia, Netherlands, Romania, Serbia, United Kingdom, Ukraine

North America : Canada

South America : Argentina

Asia : Bangladesh, Lebanon, United Arab Emirates

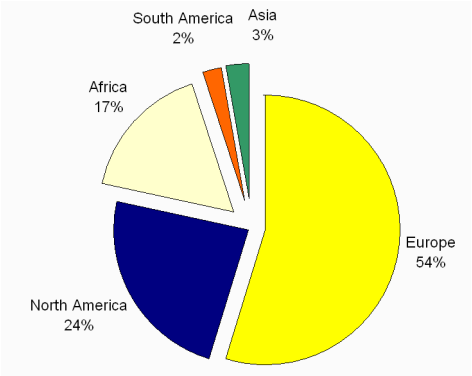

Figure 4.9.: Distribution of second survey answers by continent

4.6.1. Students' online Communication: Context of Use

208 out of 258 valid responses (age 20 and older were excluded, cf. chapter 4.1) indicate they use computers for communication with their friends (80%). Out of the 50 students that do not use a computer, 30 use a mobile phone. Interesting to note, 19 out of these 50 respondents come from Africa (eight from Europe, six from North America). Four respondents do not use any technical devices for communicating with their friends.

Devices

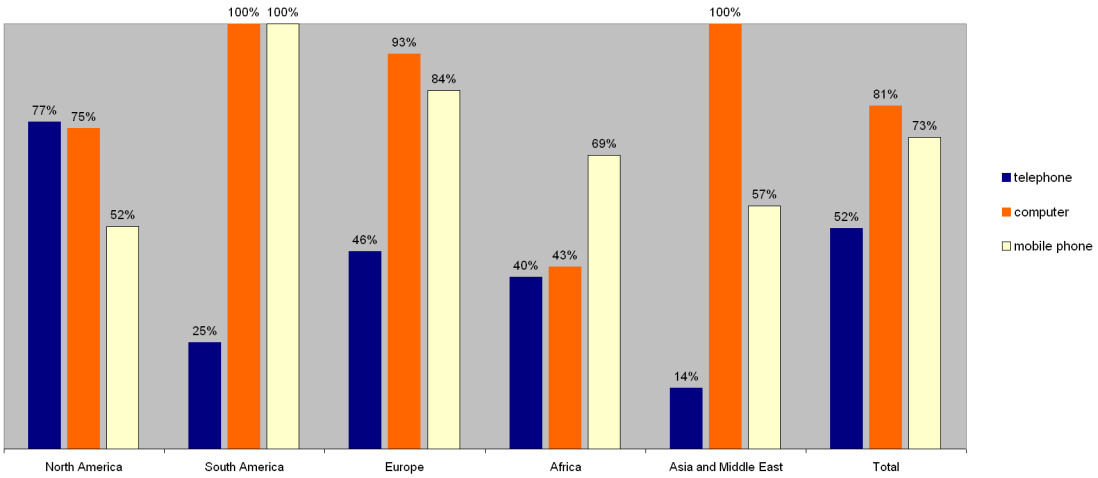

Figure 4.10.: Answer distribution to the question "Which device do you use for communicating with your friends?" by continent.

Out of the three devices enquired, computer is — on average — the most common device used for communicating with friends. Again, there are considerable variations ranging from 43% in Africa to 100% in South America and Asia. Mobile telephone communication is used by a majority in all continents, with 100% of all South Americans posing the greatest proportion in any continent. Out of those who do use mobile phones, writing messages and

talking are done by almost all users across all continents. Pictures are exchanged by less than half mobile phone users. Accessing the mobile internet is not yet a common activity by many users either — around 1/4 of all students use it.[19] Landline telephone communication only plays a considerable role in North America, with over 3/4 of all students selecting this device.

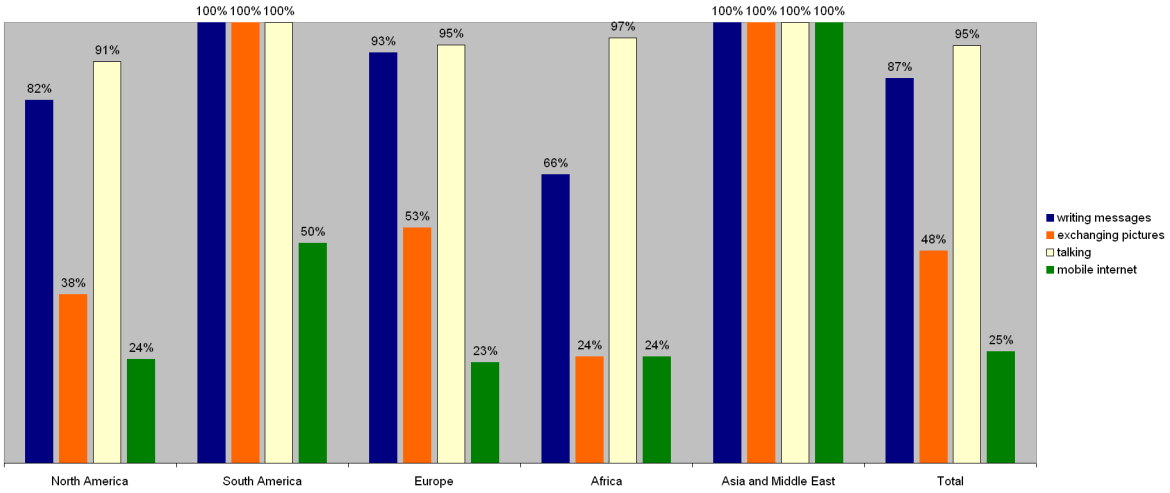

Figure 4.11.: Answers to "What do you use your mobile phone for?" by continent. Numbers are based on the total number of respondents claiming to use mobile phones for communicating with friends.

Frequency

For software criteria development, it is interesting to look at computer use frequency in particular. Results for frequency-of-use questions suggest that — with the exception of African students — over 3/4 in each continent use a computer for online communication with their friends at least on a weekly basis (only 40% in Africa but 100% in Asia and South America). Daily use frequency is lower in all continents, dropping to 19% in Africa (lowest proportion) and 80% in Europe (highest proportion). Numbers for frequencies and locations are based on that proportion of respondents that indicated to use a computer for online communication with friends. This means that e.g. for Africa, only a part of 43% of all answers apply.

Locations

Looking at the profiles which emerge when analysing online computer use frequencies and locations clustered by continents highlights a variety of usage patterns. Location and fre-

[19] Asia and Middle East as well as South American countries are based on very few answers (four each). Considering that the coordinator for South America stated he could only do the survey with his own class, this suggests similar usage patterns since students attend the same school and even class and are from the same social background. Thus, these answers are not to be overrated as there was no variation in variables such as peer dynamics and local infrastructure.

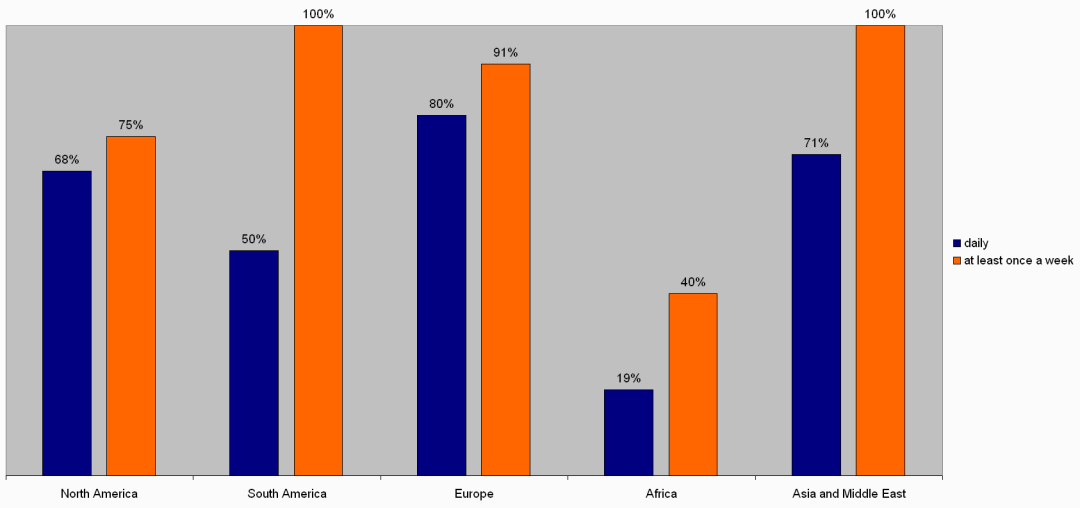

Figure 4.12.: Computer use for communicating with friends at least weekly by continent. Numbers are based on the total number of respondents claiming to use computers for communicating with friends.

quency of computer use by continent are visualised by figures 4.13, 4.14, 4.15, 4.16 and 4.17

School is an important location for students' regular internet access across all continents: Africans are among the most regular users in schools (89% weekly or daily), followed by North American students (70% weekly or daily).

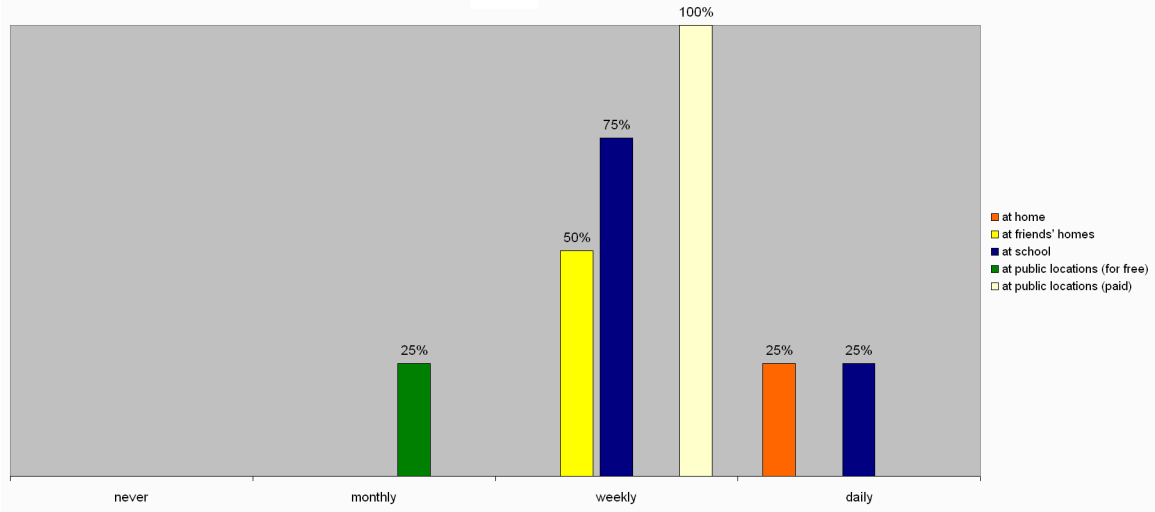

Figure 4.13.: Frequency and location of computer use for South America based on 4 answers from Argentina

If the family owns a computer that is connected to the internet, students tend to use them daily. In Europe, Asia and North America, over 70% of students go online at home. This number drops to about 1/4 in South America and Africa (25% and 26% respectively).

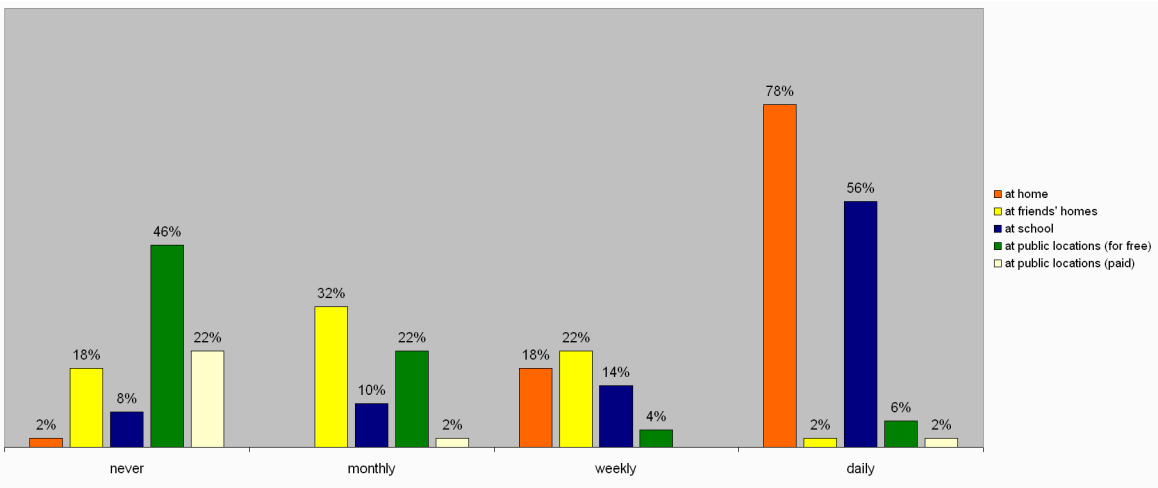

Figure 4.14.: Frequency and location of computer use for North America based on 50 answers from Canada. (No computer use: 16)

Only for South American and African students, fee-based internet locations seem to be a real alternative (100% in South America and 47% in Africa). For all other continent clusters, the proportion of at least weekly use of fee-based locations is 13% or lower. Interestingly, students across all continents rarely use public internet access locations which are free of charge: only 10% or below use them weekly or less often.

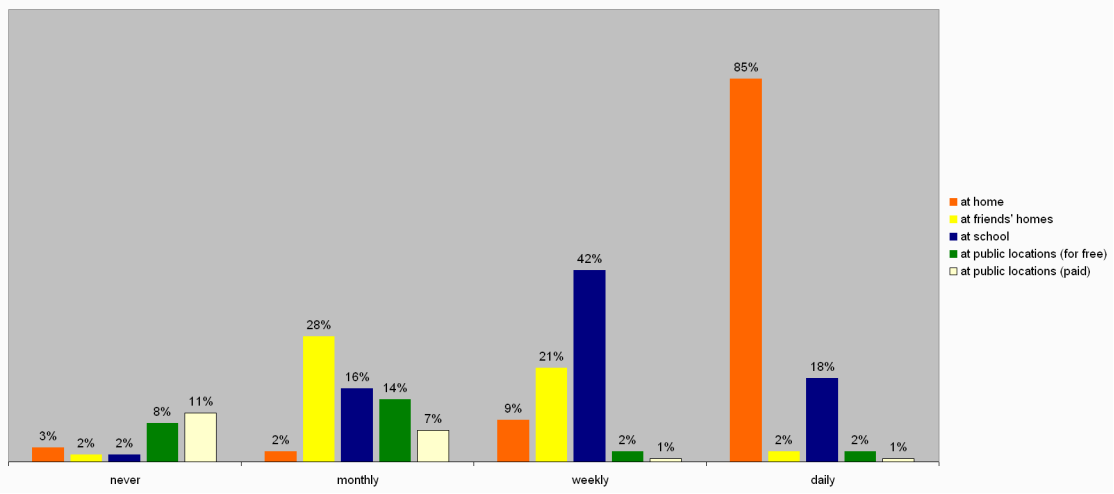

Figure 4.15.: Frequency and location of computer use for Europe, based on 130 computer users from Hungary, Latvia, Macedonia, The Netherlands, Romania, Serbia, Ukraine and United Kingdom. (No computer use: 10)

In South America half of the students indicate to use friends' computers at least weekly. In all other places this proportion is lower than 1/4. Open answers to the question which enquired usage locations mainly named relatives' homes or repeated one of the response alternatives.

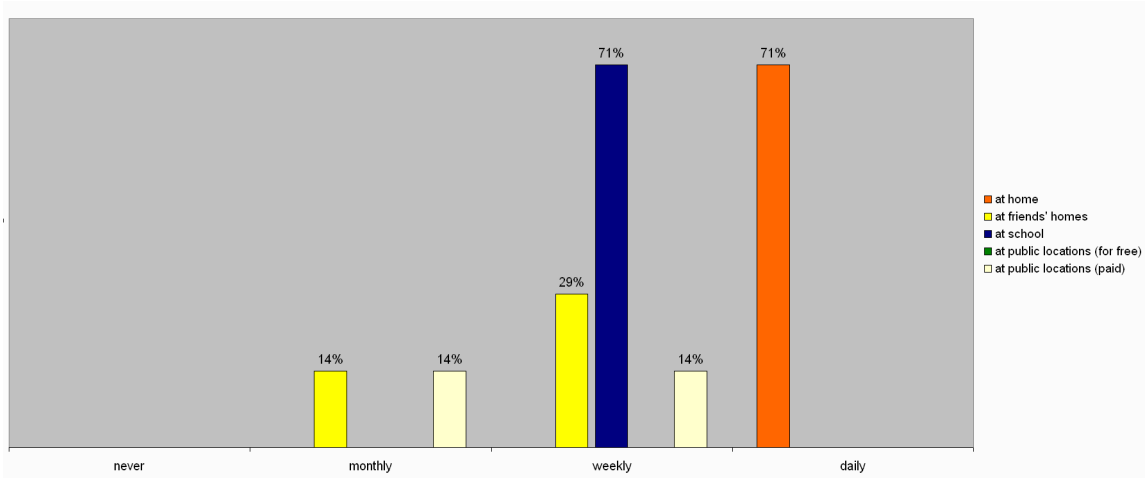

Figure 4.16.: Frequency and location of computer use for Asia based on 7 answers from Bangladesh, United Arab Emirates and Lebanon

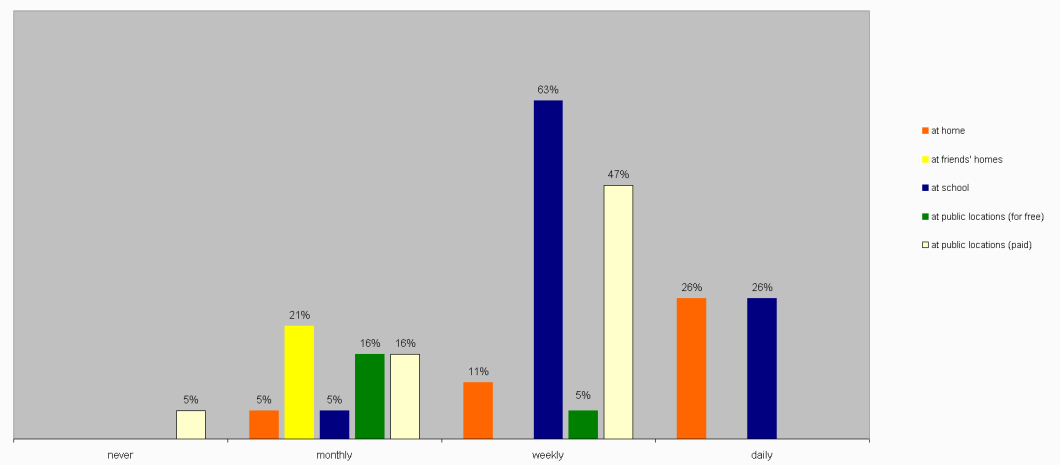

Figure 4.17.: Frequency and location of computer use for Africa based on 19 answers from Burkina Faso, Egypt, Ghana, Madagascar, Mali, Liberia, Senegal, Tchad, and Zambia. (No computer use: 23)

Software

171 out of 208 (82%) believe they are able to or have already tried to install their own software. When asked for the type of software, students indicate that they use mainly instant text messengers (73%). Communication software involving other media than text (e.g. audio or video) are much less common. Open answers to the type-of-software question repeated types that were covered by the response alternatives or stated web-based communication software, indicating misunderstanding of the question's focus (client-based communication software).

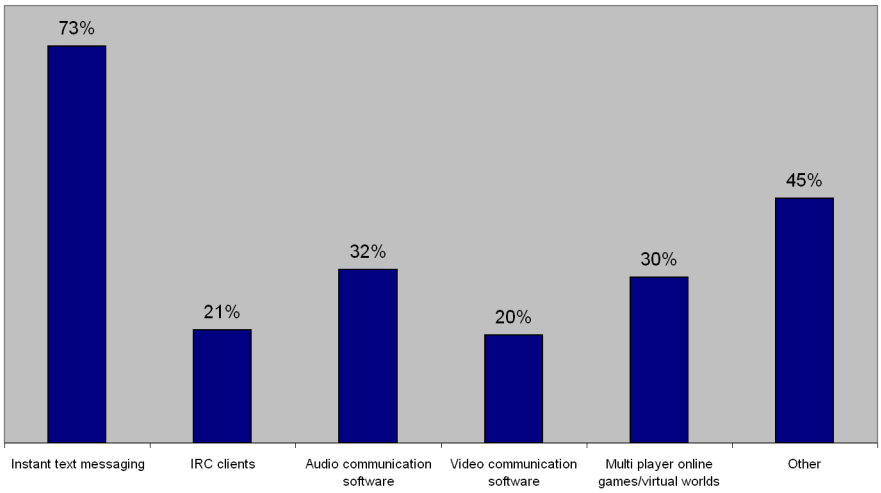

Figure 4.18.: Types of software used by continent

4.6.2. Students' online Communication: Preferences

Further data analysis allows insights into students' preferred community websites and which functions they like using when communicating with friends.

Websites

Students indicated a total number of 76 different websites they access for online interaction with friends. Below, websites mentioned five times or more are listed: As this ranking of websites (cf. table 4.3) is based on all responses — which showed a high variation across countries — frequencies and positions of individual websites do not have a very strong significance. However, with most students learning English, English community websites such as facebook.com and msn.com seem to be popular across countries. The entire list of websites can be found in the appendix of this thesis.[cf. appendix 6.3] Overall, students included websites in the categories indicated in table 4.4. Some responses contained several aspects and were thus classified in more than one category.

The great number of different social network websites implies that they are country and/or language specific. To some extent, disembodiment can be found within answers, as several students indicate websites containing clearly adult content. (cf. chapter 4.1)

Activities

Additionally, students were asked for the type of functions they use when surfing their favourite website. The following ranking denotes that all functions proposed are also used by students.

Website	Total
facebook.com	74
msn.com	45
yahoo.com	35
draugiem.lv	27
one.lv	26
youtube.com	23
myvip.com	21
google.com	18
hotmail.com	16
iwiw.hu	16
bebo.com	12
hi5.com	12
gmail.com	9
myspace.com	9
skype.com	8
boomtime.lv	7
meebo.com	7
inbox.lv	6
twitter.com	6
ebuddy.com	5
napiszar.com	5

Table 4.3.: Websites mentioned at least five times

Website category	Total
General social networks	19
Thematic community websites	18
Email service providers	12
Instant messaging websites	
closed (only friends)	4
open (public)	2
combining services	2
Online gaming websites	15
File sharing services	2
Websites without community aspects	8
Sum	**72**

Table 4.4.: Clustering of websites mentioned

As can be seen, there are no great outliers in either direction. Only two functions are used by more than half of the students — both are related to exchanging photos. Activities involving a public expression of opinion (e.g. writing status messages) are ranked lower than those involving one-on-one chat or passive reception of content (look at photos). A further note deserves the fact that there is a greater number of respondents that watches videos than that uploads them. This might be for infrastructural reasons — not everyone who has the equipment to watch online videos also possesses a camera for creating videos.

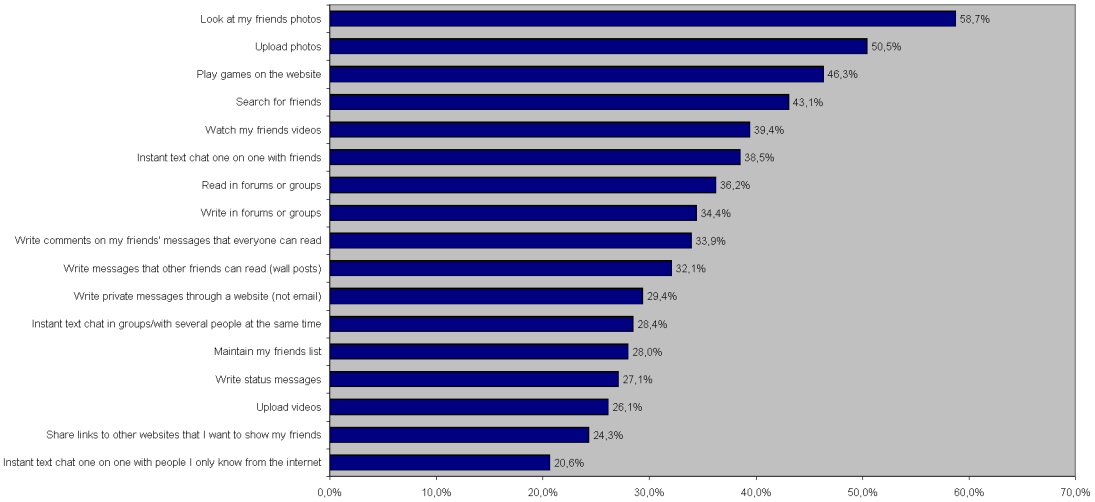

Figure 4.19.: Website activities ranked by popularity

4.6.3. Discussion of Results

Summarizing the results of the second survey, the following points emerge. Students in Africa, South America, and Asia, and the Middle East primarily access the Internet at school once a week. This points towards weekly computer lessons. Students in Europe and North America on the other hand mainly access the Internet at home. If the Internet is accessed at home, a more individual and self-determined usage can be expected than if it is limited to controlled school settings. This might explain why South American students move to accessing the internet at locations that charge a fee.

Results have indicated that, overall, a considerable number of respondents uses a computer for online communicating with their friends. This may be due to the survey context: students asked most likely had Internet access at school at least and are using it for communication during their GTP project hours. Therefore, data might reflect proportions among GTP participants but not those of the respective countries or even continents. The significantly lower computer use among African students was expected and reflect global inequalities in the distribution and access to ICTs. [Unwin, 2009: 25 ff.]

Answers on the type of preferred communication software functions indicate that a 'lean' communication channel (text chat) is preferred to richer options (audio/video). The author assumes that this is due to infrastructural reasons (e.g. no video conferencing equipment) and a socially rather than rationally driven media selection. (cf. chapter 3.3.3). If a critical mass in a group of friends does not use video chat, there is no added value for anyone within that group in using it.

A further limitation applies to the accuracy of answers in relation to the questions. As has been stated earlier (cf. chapter 4.1), not all respondents were native speakers. Additionally, it seems some of the questions' wording was not unambiguous (see discussion

on web-based vs. client-based software above), thus possibly affecting the survey's validity.

As suggested by Schulmeister [2008], young people's online communication seems to be primarily an extension of already-existing real-life social activities to the online world. Therefore, activities such as playing games, 'meeting' and communicating with peers by exchanging messages in the form of texts or pictures are ranked relatively high. The low quotation of activities involving interaction with strangers adds to this idea: only two public chat websites — as opposed to friend chat with a buddy list — were quoted and Instant text chat one on one with people I only know from the internet was ranked last.

4.6.4. Conclusion

This chapter answered how often and where GTP students go online to communicate with friends, which activities they engage in by preferably using which type of software (web-based and client-based). The results gained will be used as a basis for criteria development in the following chapters. The following points are the result of this chapter's deliberations and have direct effects on an additional GTP communication software component.

- As not all students have access to the Internet on a regular basis, communication software supporting contributions via SMS might be an alternative.[20]
- The high number of weekly Internet users as well as the geographic distribution of GTP participants suggests that a great coordination effort would be necessary to set up synchronous communication. Thus, asynchronous communication seems the preferred option.
- Results indicated a high number of students accesssing the internet during school. It is assumed that this mainly happens during class time. Hence, communication software should consider limited numbers of computer per students as well as provide the possibility to make contributions without the need for multiple log-ins. It is to be investigated how social presence is created most efficiently and whether individual student profiles or collective group profiles are the best choice.

Yet, it is questionable to what extent current computer use actually influences students' acceptance of an additional software application. Only a purposeful implementation and constant re-evaluation may answer this question completely. Hence, this analysis of communication behaviour provides insights into popular software and functions, and only increases the chance for adoption of a new software applications by students if elements that are currently popular with students are included in its design; but it does not guarantee its successful adoption.

[20] Cf. the study done by Chigona & Chigona [2008] on young people's extensive use of MXit, a South African mobile instant messaging service

5 Software Solutions

Finally, this part of the study proposes a number of software applications which are expected to meet the needs and address development potentials identified in previous chapters. In order to avoid suggestions which are purely determined by technological factors, the complex organisational, institutional and pedagogical context in which the GTP is embedded is considered. This allowed the deduction of criteria based on which software selection, and essentially evaluation, was carried out.

The last part of this chapter presents potential software solutions and presents a data model of the GTP context. This would help a potential software engineer with implementing software according to the needs of the GTP. A successful implementation of one of the alternatives proposed is expected to stimulate discussions during a reciprocal exchange between GTP participants in order to promote further development of intercultural awareness as well as students' independent, purposeful, and sustainable use of ICTs.

5.1. Identifying Software Requirements

Previous chapters have analysed GTP development potentials derived from theory, GTP practice, goal effectiveness and finally students' needs as well as their current online communication behaviour. All chapters' conclusions have indicated that there is a need for an additional communication software which allows for a more sustained, direct and reciprocal student communication than current wiki or email communication does. These needs can be met by

- Enhancing cross-classroom dialogue in order to develop a deeper degree of intercultural awareness (cf. chapter 3.4.1),
- At the same time increasing participative learning from each other's instead of only about each other's culture,
- Supporting the use of computers by students themselves.

This chapter therefore refines and extends implications derived from these analyses in order to develop requirements for the final step of selecting suitable software that meets the needs of the complex combination of pedagogical, normative as well as legal, infrastructural and socio-technical constraints. Classification of requirements is done according to the taxonomy developed by Glinz [2007], who distinguishes between requirements related to functional, performance or specific quality aspects and constraints (cf. figure 5.1). This taxonomy seems appropriate for the purpose of providing a comprehensive frame for describing the qualities of the software to be selected. Its advantages lie in the elaboration of the category of non-functional requirements into additional categories which allow a more fine-grained quality specification. [ibid.: 24] Constraints will form the basis for the list of proposed software solutions which are then matched against requirements.

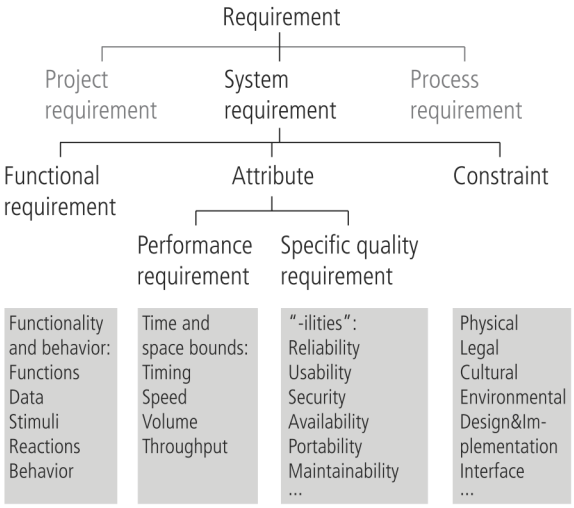

Figure 5.1.: Requirements classification according to Glinz [2007: 25]

5.1.1. Requirement Implications derived from previous Chapters

As has been suggested by learning theories, learner autonomy is highly valued, although a certain structure and guidance is important in order to e.g. adapt content as well as objectives to younger students' skills and individual needs. It has been argued that intercultural communication situations in particular require instructed discussions of particular challenges and possible unusual situations encountered during communication. Therefore, discussion spaces need a simple but appropriately denoted purpose. Moreover, it was concluded that GTP provides a good starting point for the development of meta-learning skills such as self-directed learning as proposed by connectivism. Students should therefore be allowed to access the software after class time on their own. Further reflections were related to the degree of interaction within learning scenarios, which is considered a fundamental element for establishing not only of sustained threads of communication but also for relating each others' opinions in the form of reciprocal dialogue. The adaptation of the model of practical inquiry by Garrison et.al. has shown that there are potentials within GTP for the

extension of bi-directional interaction. As a result, a forum-like threaded discussion component is considered appropriate to engage students in sustained, reciprocal dialogue. During interaction, the element of social presence has been found a key factor for successful (intercultural) communication with the aim of higher-order learning critical thinking. In an online communication environment, this may be achieved by including mutual awareness functions in software applications, such as transmitting meta information on the interlocutor's person (profile picture, recent activity feed, local time, location, status message etc). Finally, the facilitation of a sense of community in order to support identification with the project and achieve true cooperative learning was rated important by CSCL theories. Including aspects such as membership in a network of people with a common interest, customizing the graphical and functional design as well as localizing interface and content can support this aim.

GTP's current, well-established project software mainly focuses on presentation of Learning Circle results and thus reaches for different objectives. The additional component is to facilitate online communication without making currently used software obsolete. As a result, teachers are still in full control of Learning Circle outcomes presented in wiki pages or emails, while students are encouraged to pursue the discussion of themes also outside of the classroom. The author once again underlines at this point the importance of written communication for the development of critical thinking, which creates durable content in a more obliging process. (cf. Garrison et al. [1999] and chapter 4). Therefore, software which mainly supports the exchange of asynchronous, text-based messages seems the most appropriate solution.

In order to extend intercultural learning on a personal level, software should support identity management and hence be based on individual or group profiles where students may enter information about themselves (e.g. favourite songs). Ideally, profile information can be adapted to the Learning Circle theme, enabling participants of *Sports and Games* to share their favourite sport or game respectively. However, entering personal information needs to be optional as self-exposure and explicitness in communication varies across cultures. (cf. chapter 3.2.1) Since the concept of profile-based community software is already widely-known (cf. chapter 4.6) and the friend-related activity search for friends is ranked fourth (43.1% of respondents who use a computer for online communication state to use this function) among common online activities, it is suggested that the software support profiles. First-time participants across all countries rated *Make friends* second when asked for their expectations. Therefore, software should support GTP students in establishing connections to learning partners also beyond the scope of their Learning Circle, thus creating a sustainable network of GTP participants. Individual roles within GTP should correspond to differing levels of authorization within the software (e.g. students, teachers, country coordinator, facilitator, project coordinators). Therefore, software proposal in the following chapters will be done by evaluating software suitable to model the basic functions identified

in this chapter — which correspond to characteristics identified in literature (see classification below).

The second survey has shown that students' preferences lie in sharing photos and playing games. Participants should be given the opportunity to share pictures of themeselves or those related to a Learning Circle topic on their profiles. Adding the possibility to play online games (ranked third) is an obvious way to engage children across all cultures in intercultural interaction. Naturally, educational value of a game application as well as accessibility also for participants with varying degrees of connectivity are to be ensured, limiting the alternatives to an asynchronous, resource-efficient design.

Further, according to second survey data, the great majority of students using computers for communicating with friends have experiences with social networks.[1] In line with Schulmeister [2008], the author suggested that online social networks can be seen as an extension of young peoples' offline activities. They are therefore a practical tool for engaging students in sustainable intercultural communication. According to Richter & Koch [2008], social networks [2] are characterised by six basic functionalities:

1. Identity management
2. Expert finding
3. Context awareness
4. Contact management
5. Network awareness
6. Exchange

The type of software to be selected for GTP is to support at least some of these characteristics: exchange (sharing any kind of textual or visual communication artefacts) network awareness (visualising of members' activities, similar to social presence described previously) and context awareness (feeling of sharing common interests, similar to the construct sense of community) and identity management (purposefully providing certain details about oneself to the community, thus creating a picture influenced by personal and cultural values of oneself). Considering the previously defined objective to enhance the sense of community as well as to give GTP participants a way to interact with each other in a sustainable network, implicit communication modeling elements of network awareness (social presence, mutual awareness, cf. chapter 3.3.2) are particularly important. Explicit, theme-related contributions are done in the Wiki or Dgroups systems as before. As a result, it is decided that the purpose of use of more traditional forum or bulletin board software; even though it might

[1] The second survey indicates that 87.5% (equalling 70.5% of all respondents) are a member of at least one social network service.

[2] Also called social networking services [Richter & Koch, 2008] or social networking sites [Boyd & Ellison, 2007] the terms social network software/services/sites and community software/services/sites are used synonymously hereafter to refer to a type of software which supports a web-based community with the characteristics described.

meet all criteria, is not sufficient as it mainly relies on explicit communication and lacks the type of implicit interaction, such as an activity feed of a community's members' recent actions may provide. The author has outlined the importance of reflective written communication several times. As a result, structured, theme-related communication as provided by forums is still highly valued and should be implemented as part of the community software to be selected.

5.1.2. Constraints

Technical and Infrastructural Constraints

Chapter 2.4 has described software used by current GTP Learning Circles while chapter 4.6 later assessed students' ICT infrastructure and online communication habits. As a result of these considerations, the following points should be considered before deciding for a software application.

As has been indicated by second survey results, not all students in all countries have equal access to the Internet and/or mobile communication devices. Frequency and location of access vary considerably across continents. Therefore, in order to ensure equal rights for all GTP participants whenever possible, technical affordances are to be kept at a feasible rate. The following points summarize the requirements from a technical and infrastructural point of view.

- Bandwidth usage should not be higher than when visiting an average website.
- Smaller monitors should be considered by screen design or a mobile version should possibly be provided.
- Software complexity (e.g. client-side computation using AJAX) should be used with care, taking into account bandwidth and response time differences.
- The young target group with a possibly low computer literacy should be considered, thus user-friendly, simple and intuitive navigation is important.
- Since Internet connection is instable in some countries, software should signal when traffic has been cut or alternatively provide offline caching of data (e.g. browser plug-ins such as Google Gears)
- Similarly, due to instable power supply, software should provide autosave functionality

Legal Constraints

Next to infrastructural limitations, a number of restriction apply when selecting software for the field of education. This aspiration becomes more complex when schools from several countries, all bound to their individual legal frameworks are involved.

The author asked country coordinators — usually teachers themselves or persons with close connections to educational institutions in their country — from five GTP countries to report legal restrictions that apply in their country's schools. A compilation of their answers[3] results in the following insights:

Regulations on students' internet use varies considerably depending on the country. All coordinators report that schools in general are aware of potential threats students might be exposed to. The degree of official regulation ranges from strict rules (e.g. in the United Kingdom, where "There is no law as such but there is a duty of care and virtually all schools interpret this to mean preventing students accessing on-line communication whilst they are at school." [Mary Gowers on restrictions in the UK; c.f. appendix 6.3for the email]) to "[...]no legal restrictions regarding the use of Internet and online communication." [Issa Boro on restrictions in Burkina Faso; c.f. appendix 6.3] in Burkina Faso as well as in Hungary.

Country coordinators report different institutions responsible for regulating students' online communication. Some state that it is up to a local or provincial authority (United Kingdom, Canada) to set rules. If there is no such authority, all others report that it is the school itself who sets rules (The Netherlands, Latvia, Burkina Faso, Hungary).

Measures taken range from blocking "[...] just about anything that has an interactive component" [Mary Gowers on restrictions in the UK; c.f. appendix 6.3] to none at all (Latvia). Some coordinators report technical measures taken by school ICT administrators, such as content filtering based on a bad word blacklist (Hungary). Others state that even mobile phone use is strictly regulated by schools (The Netherlands); yet others rely on sensitizing educational staff in charge to potential threats emanating from the Internet (Burkina Faso).

As a result of this great variation concerning regulation of students' online communication activities across countries, it is not possible to define a general list of legal restrictions that apply to all GTP countries. If a particular type of software is to be adopted successfully by all participants, it needs to conform to even the strictest countries' restrictions. These considerations imply that software selected cannot be a commonly blocked website, e.g. a hosted social network service.

[3]Individual emails can be found in the annex

Further, when deciding on the type of software to be considered, a primary distinction can be made between web-based and standalone applications.[4] As indicated by coordinators reports on restrictions in school IT administration, proposing a standalone application requiring installation would not be feasible if the aim is to enable access by all participants. Often, schools restrict teacher authorisation for manipulating software so that additional capacity and administrative effort would be needed.

Additionally, a potential software application

- Must not contain advertisement
- Must provide a safe, enclosed environment to prevent possible harassment against students
- Must provide a fine-grained role management and adhere to data security standards

Constraints derived from GTPs Learning Circle Practice

In addition to restrictions derived from infrastructural and legal aspects, the following organisational constraints result from current GTP practice.

The software application to be selected should

- Be available in all GTP countries
- Be internationalized in order to allow for a localised user interface in at least all six Learning Circle languages (English, French, Spanish, Dutch, Arabic, German)
- Allow students as young as nine years to join

Additionally, software should provide an authorising procedure which does not rely on email verifications as some students might not have their own email or schools may block email systems. Further, previous experiences with GTP chat are a valuable source of information on lessons learned and possible pitfalls in implementing communication software. The author was able to gain reflections from the Latvian country coordinator. She remembers:

> "I must say that chats were rarely successful and the reasons are several. Sometimes teachers had problems accessing the platform, often you had to wait as nobody was in the chat room and it was just waste of time waiting. Even if a chat happened, the communication was often not really meaningful. A couple of times I myself had cases of witnessing dirty talks and felt extremely uncomfortable and ashamed facing my students. [...] The reasons of such situation could be tachnical difficulties in some countries, teachers who didn't supervise

[4] The term web-based refers to applications which only require a browser software with an Internet connection whereas standalone applications are installed locally on the user's computer.

> the chat, difficulties connected with different time zones and schedules." [Ligija Kolosovska on her experiences with the chat in Latvia; cf. appendix 6.3]

Consequently, the following implications should guide students' personal one-on-one communication

- Students and teachers need to be sensitized to taking this form of communication serious.
- The rules of Netiquette should be taught and enforced.
- A clear task or objective should be connected to using the function.

These are implications influencing the organisational structure of GTP rather than its technology and are therefore no software requirements.

5.1.3. Conclusion

This chapter combined results of previous parts of this study by deriving constraints and requirements for additional software to be proposed with the focus on written, reciprocal student communication across cultures as an extension to current result presentation in wikis or emails. It can be concluded that only highly customized software is worthy of consideration as it needs to be distinct from currently blocked popular social network or interactive websites. It has been found that the software to be selected should have the characteristics of a web-based community software, with different GTP roles represented well by allocating varying levels of authorization, including a sensible level of social presence elements. The following chapter lists prioritised, clearly-formulated and researchable selection criteria.

At this point, only technical, legal and organisational aspects for the development requirements were considered. In practice, another important question to answer is how and at which point of a learning circle the integration of the software is sensible from a didactic point of view. Following lessons learned from previous experiences with a chat system, a software communication application should be tied to a specific task and teachers as well as students need instruction on administration and purpose of use of the system. Additionally, it is to be determined if, depending on particular cultural or pedagogical preferences, it is more suitable to create group or individual students' profiles. Further discussion of these questions would go beyond the scope of this thesis.

5.2. Classification of Requirements

The following criteria can be drawn from the previous chapter. As discussed in the previous chapter, Glinz [2007] taxonomy of requirements classification distinguishes between functional, performance or specific quality aspects and constraints. Tables 5.2 and 5.3 show how

the specific criteria derived from earlier considerations are classified into these categories, and finally prioritized into must-have, should-have and nice-to-have levels of priority. (cf. 5.1)

5.2.1. The Data Model of the GTP

At this point, it is possible to move one step further in the software analysis and proposition process. Therefore, a mental model of the interconnections between entities in GTP reality, and how they should be represented in the architecture of a social software application, is visualised here. The Unified Modelling Language (UML) provides an appropriate set of diagrams for this purpose. UML is used with the intention to adhere to data modelling standards within the field of software engineering. [Kecher, 2006: 17] Models created in UML during the analysis phase of software development help the software engineer to clarify requirements, characteristics and qualities of a software application, as well as to identify what will not be possible to implement (e.g. due to a low budget or restrictions imposed by the technical context). [ibid.: 14] This way, a potential programmer will not need any background knowledge of the project itself and can base decisions related to the type of software architecture, programming language to be used as well as those related to interface design on this groundwork. [ibid.: 15]

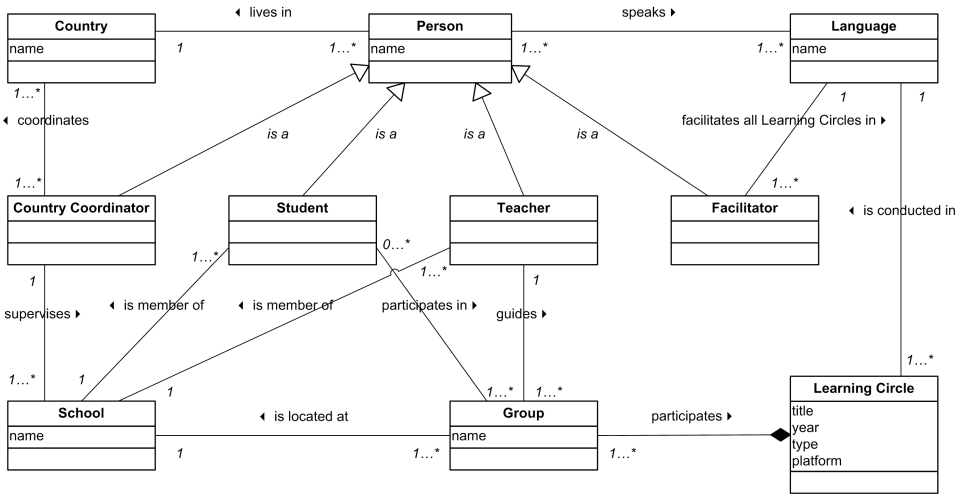

Figure 5.2.: Data Model of the GTP as a UML 2.0 class diagram

UML notation standards are not outlined at this point, as they are common practice within the field of computer science and reference is available free-of-charge. [5] In the diagram, some relations are modelled indirectly. For example, the fact that a facilitator facilitates Learning Circles is inherent in the rule within the link between facilitator and language: "facilitator facilitates all Learning Circles in one language". Likewise, all entities representing persons

[5] E.g. cf. http://www.omg.org/spec/UML/2.0/Infrastructure/PDF/ (accessed: 2009 December 24, 12:06 CET)

logically speak a language, have a name, and live in a country as their relation to the classifier person is a generalization whose attributes they inherit. Multiplicity figures within the model indicate quantitative relations between entities. For instance, a Learning Circle is always conducted in exactly one language, but there are several Learning Circles per language. Although the normal ratio between country coordinators and countries is a one-to-many ratio, there are cases where one country coordinator coordinates several countries (South America), and some where several coordinators coordinate groups within one country (Canada, where administration is organized by province).

5.3. Collection of Software Solutions

Chapter 5.1 elaborated general characteristics and uses as well as restrictions of software to be proposed derived from technical, legal and practical considerations. The previous chapter further identified must-have criteria which served as the basic requirements for creating a pool of community software to be reviewed. Reviewing was restricted to non-proprietary software released under GNU General Public Licence (GPL) (or similar).[6] This leads to the advantage that there is no dependency on one manufacturer's policies but that there is a greater pool of people with the knowledge for software support. Software that meets these criteria usually is entirely free of charge[7] and has, in contrast to many commercial community software packages, an easily-available and comprehensive documentation as well as features clearly indicated on the software's website. Since GTP is a project set in a school context, hosted software which displays advertisement and restricts privacy of content uploaded by users could not be considered. All researched community software hosted by a company and offered free of charge included advertisement, (e.g. Ning, BigTent). This results in a list which only names self-hosted software which is free of charge. Even though, community software holds a lot of commercial potential in the eyes of those interested in making money from the Internet's apparent advantage of low transaction costs. This theory refers to the notion that with the increasing propagation of the Internet, the amount of people which may be reached potentially by e.g. a single advertisement banner on a website stands in no relation to the effort needed for creating it. [Shirky, 2008: 47] Thus, besides the high number of commercial offers in the domain of community software, relatively few software projects give away their source code under a GNU GPL licence or similar and only few do not charge money for it or any service related to using it.

Software reviewing allowed at least a rough estimation of what is and what is not possible with a particular type of software without installing it. Further criteria for consideration

[6] This copyleft licence refers to the freedom of manipulating the distributed and unencrypted source code for any purpose, including commercial redistribution, regardless whether it is distributed free of charge or not. However, software released under this licence which is redistributed needs to be released under the same licence and include the full source code. [Initiative, 2009b]

[7] Due to the flexible licence, hybrid software business models have emerged where companies sell support or add-on services for GPL-licenced software or even their own manipulated packages.

included positive reviews in discussion forums[8], and a well-established support community. Providers of commercially distributed software packages on the other hand usually only indicate general features on their websites combined with the promise to customize any client's requests, but naturally do not give precise insights into their software's characteristics. The fact that software distributed under their own licence ties the user to one company, thus restricting freedom to change support in case of problems.

The web-based research for alternatives yielded three results that fulfil must-have criteria: elgg, Buddypress and dotLearn. Others were shortlisted because they fulfilled most of the criteria on first evaluation (including self-hosted operating on a free-of-charge licence which hands code ownership to the user), but considered not suitable for several reasons. Table 5.1 gives a list of software applications which were omitted as well as reasons for doing so. The following paragraph briefly indicate each software provider's main characteristics as well as current stable software version

[9] and type of End User Licence Agreement.

5.3.1. Elgg

Launched in 2004, Elgg is "[...]an open source social engine which powers all kinds of social environments [...]" [elgg, 2009]. The software project, backed by british-based Curvrider Ltd. is now starting a fee-based social learning environment software service while keeping the free community software project alive. It has always focused on educational environments in particular and names three of its advisors who are active researchers or professionals in the field of learning technologies. [[ibid.], elgg [2009]] This makes Elgg a suitable proposal as a community software in the context of GTP. The current stable version of Elgg is v1.6.1. [elgg, 2009] Elgg is released under GNU General Public Licence (GNU GPL).

5.3.2. BuddyPress

Buddypress, on the other hand, originates from WordPress, a software system used for writing weblogs. By adding community functionalities to WordPress, such as extended profiles, messaging, forums and groups, WordPress developers state that their history goes back to 2001. [WordPress, 2009] This makes it one of the older software projects considered here, leading to the advantage of a more sustainable support community and the promise

[8] As a result, Dolphin by BoonEx was not considered as it was repeatedly rated very negative in discussion forums (e.g. blog post by *janejones78* at http://www.theadminzone.com/forums/showthread.php?t=44228, accessed 2009 December 4, 21:07 CET)

[9] In Open Source software convention, a version number indicates the "maturity" of each software release, where the first number stands for major changes, while further positions indicate minor changes.[Hohensohn, Bretschneider, & Renk, 2004: 41]

Software	Website	Licence	Reasons for omission
Openwack	http://www.openwack.org/	Common Public Attribution License 1.0	▫ Software is still in alpha status
PHPizabi	http://www.phpizabi.net/	Proprietary EULA: "This License conveys to you only a non-exclusive and limited right of use, revocable in accordance with the terms and conditions of this License *or at any time deemed appropriate by the creators of PHPizabi*." [see http://www.phpizabi.net/?L=home.eula; Emphasis by author]	▫ Community is torn-apart: Real!ty Medias (phpizabi.net) and Mad Cow Medias (phpizabi.com) sites are in dispute ▫ The last version was released almost three years ago (March 2007) ▫ The licence guarantees few rights, provides no freedom, creates dependence on the company's good will
OpenENRICH	http://enrich.nic.in/	Unknown	▫ Lacks interactivity and especially social presence noticing ▫ Conservative design not respecting modern usability standards
BoonEx Dolphin	http://www.boonex.com/dolphin/	Creative Commons Attribution 3.0 License	▫ Contains advertisements to dating software without a licence and thus would be blocked by key word based banning systems ▫ Many negative reviews stating unreliable company
Mahara	http://mahara.org/	GNU General Public License 3	▫ Profile fields are not flexibly defineable ▫ The focus is on creation of different profile views rather than on communication between members ▫ Expects high ICT literacy from users with extensive profile modifying and privacy rights ▫ There is low social presence noticing (e.g. no live activity feed) ▫ It seems more suitable for higher or adult education purposes

Table 5.1.: Software which was considered for the review but omitted from the final suggestion

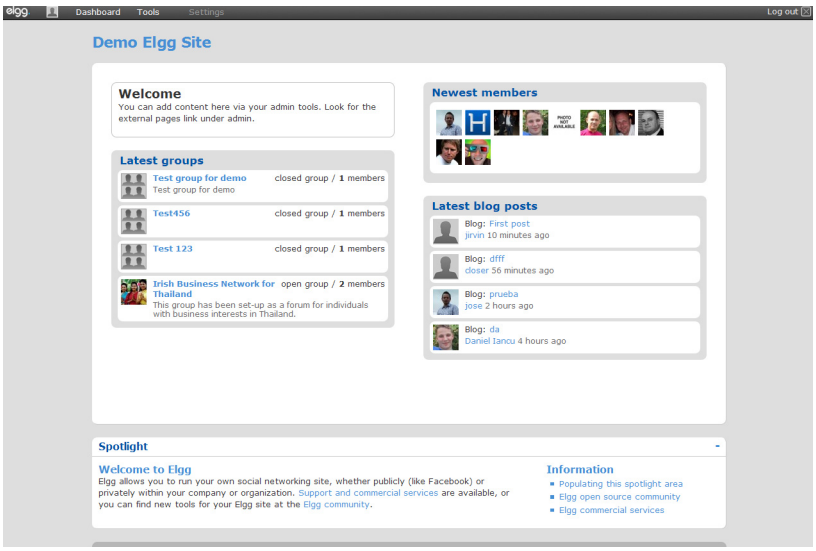

Figure 5.3.: A sample Elgg profile

of a more stable code base. Buddypress' current stable version is v1.1.3. It is also released under GNU GPL.

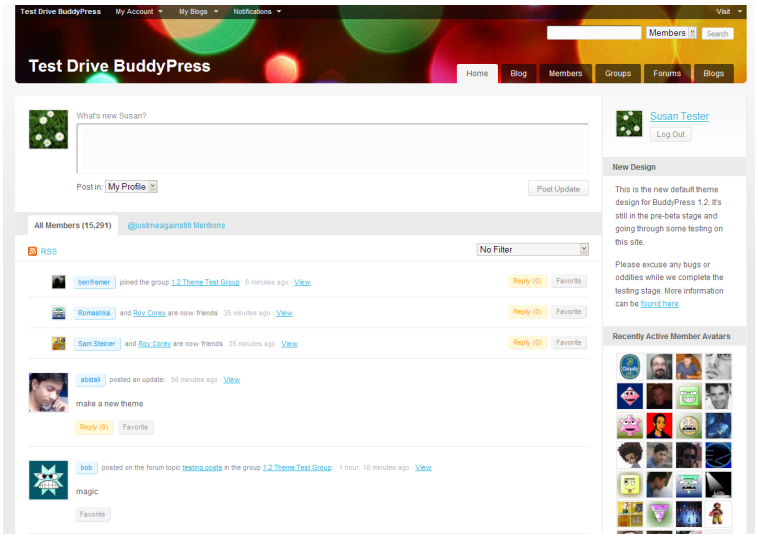

Figure 5.4.: BuddyPress sample welcome site

5.3.3. .LRN

Behind the software produced by .LRN stands a group of educational institutions as well as companies working in the field of e-learning software from ten different countries, including developing countries (e.g. Guatemala). This group is called *the consortium*. [dotLRN Consortium, 2009] Considering this broad support and user group, it can be expected that the software has been tested under various infrastructural and cultural circumstances. This may be an advantage for GTP. Technically, .LRN is based on the web framework OpenACS

(Open Architecture Community System) which provides an architecture especially developed for community websites. [dotLRN, 2009b] The current stable version of .LRN is v2.4.1, making it the most "mature" release out of all products considered. It is also released under GNU GPL. dotLRN [2009a]

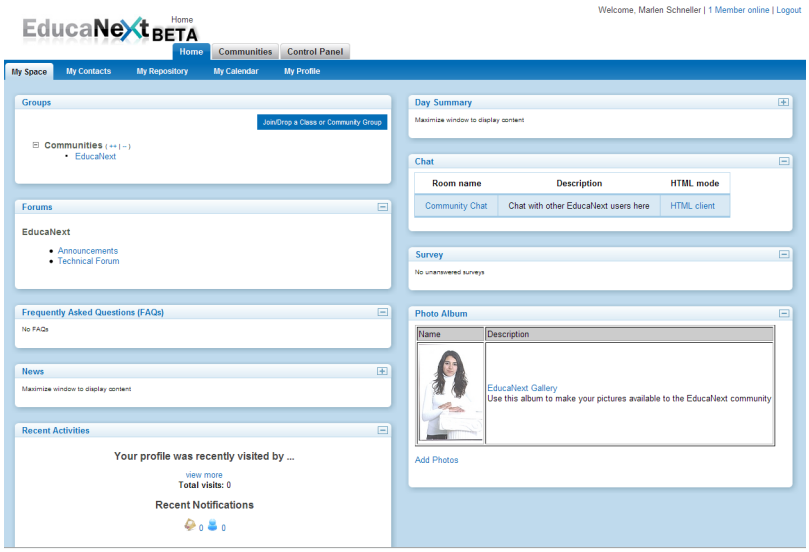

Figure 5.5.: .LRN sample welcome site

5.4. Matching Software and Requirements

Finally, after having identified requirements and selected software, they may be combined and prioritised. The prioritisation treats requirements and constraints according to the following scale:

must-have need to be met by a software application in order to be considered for proposal

should-have important for reaching the aims set but may be missing if compensated for by another outstanding feature

nice-to-have not necessarily present but possibly implemented at a later stage

Not all requirements and constraints specified could be validated for all types of software. For all proposed software applications, the author was able to access a live version. This was in all cases a test installation either made available by the provider[10]; or in an existing community who runs the system.[11] Sometimes, the documentation of a particular software project was not comprehensive enough, and the demo installation did not provide sufficient administration rights in order to verify the requirement or constraint. Potential extensions and plug-ins (also called mods, hacks or add-ons) are only available and testable when the

[10] BuddyPress: http://testbp.org/ (accessed: 2009 December 3, 17:01 CET) ; elgg: http://demo.elgg.org/ (accessed: 2009 December 3, 17:18 CET)
[11] .LRN: http://www.educanext.org (accessed: 2009 December 3, 17:12 CET)

system is installed on the user's own server with full administration rights.[12]. In these cases, question marks were entered into the respective fields.

5.5. Results and Suggestions

The software reviewing process is now at a point where a comparison between the three software applications leads to a discussion of findings in this section. Each of the applications met all must-have criteria or the author was confident that it is possible to find an extension to the core functionalities of a piece of software by investing in further investigation. Navigation in all demo installations was intuitive, however this is a subjective assessment of the author and also needs verification by a user test which may lead to more objectively refined insights.

Out of the three alternatives, the .LRN software plattform is the one with the greatest focus on the implementation within an educational context. It comprises all relevant functionalities of a Learning Management System (LMS), including a homework dropbox, assessment and evaluation features and a calendar function. Yet, with features supporting the interaction between learners and the creation of a sense of community (subgroups, news feed, personal weblogs, tagging functions) the .LRN software project also offers all functions of a social networking software. Although its demo installation[13] does not provide extensive social presence nor interpersonal communication support, the .LRN implementation done by EducaNext[14] shows that .LRN includes recent activity notifications (recent profile visitors, registrations, file uploads etc), photo galleries, private messaging and synchronous text chat. It is yet to be determined whether an extension allows the implementation of the requirement to write direct public 1:1 messages (known as entries on the *wall*, *guest book* or *shoutbox* on a person's profile). .LRN is the only software application that supports the display of a person's local time in their profile. Yet, BuddyPress has an even stronger emphasis on including social presence indicators on all of its pages. Even on the user's own profile page, recently active members within the community are displayed. It is to be investigated whether this size can be reduced by applying a lighter design template and/or adjusting the displaying of content items. After having tried the demo installation of BuddyPress, the author found that it has the greatest emphasis on social presence notification out of all applications. For each content category within the community (Blogs, Forums, Groups, Members), the user is shown the most recent activity within that catagory, including how long ago and by whom it was done. In the Elgg demo version, latest messages and activities are also well displayed in a separate page with tabs distinguishing between different people's

[12] Performance requirements, for example, could not be tested exhaustively and comparably without an installation. An estimation was attempted by comparing the size of the test profile page which was filled with the same data for all three platforms using the Add-on "Extended Status Bar" of the Mozilla Firefox Browser. cf. https://addons.mozilla.org/de/firefox/addon/1433 (accesesd: 2009 November 24, 12:54 CET)

[13] Available under http://oacsrocks.org/ (accessed: 2010 January 25, 21:50 CET)

[14] Available under http://www.educanext.org (accessed: 2010 January 25, 12:44 CET)

Requirements	Priority	elgg	BuddyPress	.LRN
Functional Requirements				
Profiles	*must-have*	✓	✓	✓
Flexibly defineable fields (e.g. favourite song)	*must-have*	✓	✓(defined at installation)	✓
Simple manual creation of new students profiles	*should-have*	✓(using LDAP)	✓(using LDAP)	✓(using LDAP)
No email verification necessary	*should-have*	✓(using LDAP)	✓(using LDAP)	✓(using LDAP)
Display local time in profile	*nice-to-have*	✗	✗	✓(time zone per group)
Direct public messaging (1:1, e.g. wall posts or guest book)	*must-have*	✓(plugin message board)	✓(reply to activities)	✓(plugin)
World map location lookup function for classes	*nice-to-have*	✓(plugin google map)	✓(plugin)	✗
Photo and/or file sharing	*must-have*	✓(plugin photo gallery)	✓(plugin)	✓
Forum-like threaded discussion function for 1:n communication	*must-have*	✓	✓	✓
Tree structure hierarchy in forums	*must-have*	✗	✓	✓
Social presence features				
Live activity feed	*nice-to-have*	✓	✓	✓
Pictures next to posts	*must-have*	✓	✓	✓
Online status messages	*should-have*	✓	✓	✗
See who is online	*nice-to-have*	✗	✓	✓
Asynchronous games (e.g. easy word games)	*nice-to-have*	✗	✗	✗
Friend list	*should-have*	✓	✓	✓

Table 5.2.: Matching of functional requirements and software applications selected

Requirements (continued)	Priority	elgg	BuddyPress	.LRN
Performance Requirements				
Designed for access with mobile phones	*nice-to-have*	✓	✗	✗
No exaggerated bandwidth usage				
Size of an example profile page	*should-have*	34 KB	142 KB	45 KB
Number of pictures in an example profile page	*should-have*	20	66	6
Offline data caching	*should-have*	✗	✗	✗
Autosave functionality	*should-have*	✗	✗	✗
Specific Quality Requirements				
Authorization management (control content visibility for different types of profiles)	*must-have*	✓	✓	✓
Internationalisation	*must-have*	✓	✓	✓
Localization for GTP languages	*should-have*	✓	✓	✓
Custom graphical design	*must-have*	partly	✓	✓
Data security: Keep community private	*must-have*	✓	✓	✓
Usability aimed at young ICT beginners	*should-have*	✓	✗	✗
Web-based platform	*must-have*	✓	✓	✓
Constraints				
No advertisement	*must-have*	✓	✓	✓
Allow users from nine years on	*must-have*	✓	✓	✓

Table 5.3.: Matching of performance, specific quality requirements and constraints

recent activity: there is a tab for that of all community members, that of friends and the user's own activity.

Accessibility is an aspect outlined explicitly only by .LRN, who supports the W3C accessibility standards at the level double-A.[15] Since some GTP participants take part from low-connectivity countries or are enrolled in special needs education, this is an important point. Weak points of .LRN on the other hand include the lack of a comprehensive database of add-ons or modules. In contrast there is an extensive database of plug-ins available for extending the basic functionalities of BuddyPress software.[16] The same applies to Elgg.[17] Likewise, there were differences in the systems' support of user role and authorization management. Implementing user roles in Elgg would require some kind of workaround or plug-in as it does not provide this functionality by default, whereas .LRN has an integrated, fine-grained role management which distinguishes between students, teachers and course facilitators. For BuddyPress, there are various ways of assigning user rights. The data model presented in chapter 5.2.1 may be referred to when deciding which of the entities receive their own profile role (all those which are persons) and which are better modelled as a sub-group within the social network (e.g. groups, Learning Circles).

There is an active support community for .LRN with daily forum entries in the development area of its website.[18] Similarily, the Elgg developer community is active several times a day in its developer groups.[19] Due to its roots in the WordPress project, BuddyPress builds on a large existing community of users and developers with prior experience on handling large software projects. Thus, with a new forum post in the developer's area of the website every few hours, its online community is even more active then that of .LRN and Elg.[20]

With a size of 34KB and 20 pictures, the Elgg profile page is the smallest of the three pages analysed, whereas that of the demo BuddyPress installations is the largest (142 KB, and 66 pictures).

5.5.1. Conclusion

In summary, the three software projects presented here do not substantially differ in the number or quality of features they offer. Differences mainly lie in the technical framework behind each application, which determines the amount of effort needed to customize it according to the functions identified useful for the GTP. Only by installing a system, a software

[15] For an elaboration of this conformance level, please refer to http://www.w3.org/WAI/WCAG1AA-Conformance (accessed: 2010 January 14, 12:39 CET)
[16] Cf. http://buddypress.org/extend/plugins/ (accessed: 2009 November 25, 22:35 CET)
[17] http://community.elgg.org/mod/plugins/all.php (2010 January 24, 02:16 CET)
[18] The .LRN support community evolves around the underliyng framework OpenACS: http://openacs.org/forums (accessed: 2010 January 27, 23:13 CET)
[19] Cf. http://community.elgg.org/pg/groups/world/ (accessed: 2010 January 27, 23:15 CET)
[20] Cf. http://buddypress.org/forums (accessed: 2010 January 27, 23:23 CET)

Figure 5.6.: Sample Elgg profile

engineer may analyse further technical aspects, such as the extend of the community support, the quality of the project's documentation or the stability and resource-intensiveness of the installation. Similarly, it was not possible to determine to what extend it is possible to modify a system's visual design or its navigation. Eventually, this is a question of cost and effort one is willing and able to spent.

Conclusion 6

The final chapter of this study is to critically review the approaches used, analyse which restrictions apply when discussing the application of results to the GTP context, as well as deciding on the next steps in the process of further developing and possibly imlementing the findings of this study.

6.1. Applying Solutions to the GTP Context

After assessing requirements and deriving possible software solutions during the previous chapters, implications for an implementation in the GTP context are discussed here.

A successful software implementation does not stop at the point where requirements and restrictions have been determined and a particular software application has been chosen for implementation. As Kerres [2001] remarks, after an introduction of a new medium to existing structures of an organisation, many times it is necessary to introduce new procedures or even change structures. [Kerres, 2001: 134] Thus, also implementing a web-based social network requires reflections related to sensible didactic and organisational embedding. As for the software application proposed here, the context of GTP requires particular attention to the following points:

Avoiding redundancy with currently used wiki or email software

The software application proposed here does not aim at replacing the wiki or email software currently employed in Learning Circles. Participants should still be encouraged to use current software for all tasks related to the Learning Circle, where teachers are still in control of the thematic work which students contribute and where they are still forced to critically reflect their writings. The focus of the additional component lies much more on a continuous, student-driven exchange across classrooms, which goes beyond teacher-determined activities even after the Learning Circle has come to an end. By extending the exchange to more individual, profile-based exchange of messages and different types

of content, students should gain a stronger feeling of community, develop their own voice within the project, as well as identify more with the aims of the GTP. The result is a more sustainable dialogue and a higher quality of intercultural awareness through learning from eachother, not only about eachother. However, as has been outlined by IICD M&E data, some students do not or only have limited Internet access at their school. Likewise, not all students can access a computer at their family's homes. Therefore, GTP should not make the participation in the new network compulsory.

Planning the embedding and didactic implementation

Yet, the question about the best moment for the introduction and, consequently, the integration of the new social network component within the Learning Circle phases remains. Depending on the school context and the local ICT infrastructure, students may be asked to sign up as their homework or this is done as a classroom activity during the Learning Circle introduction phase. As overall conditions differ from school to school, and even from class to class, especially teachers might perceive the task of adopting yet another software application as a challenge. It is thus important to offer support and possibly some kind of training to those teachers with lower ICT literacy. Further, as has been concluded earlier (cf. chapter 3.1.5), students need guidance in acquiring meta-learning skills necessary for autonomous learning, and especially in applying technology for the integration of

Next to deciding about the appropriate time and procedure for introducing the online community, those implementing it need to determine the scope of access participants are granted from the beginning. Alternatives are either to make an open community of all GTP members where everyone is able to see all participants, and then go to their Learning Circle sub-page (or group, depending on the realisation); or to restrict visibility to the particular Learning Circle member group initially and grant access to the wider network upon successful completion of one Learning Circle. This way, the community will grow as more and more participants who have GTP experience join it. Perhaps, the reward system can be extended further by granting those students who have participated several times access to new features for every time they complete a Learning Circle successfully. These features may even include increased group responsibility, such as the authorisation to moderate threads of discussions in forums. This can be a way to support students' "[...] moral imperative and desire to participate and contribute to group goals.", thus increasing the sense of community. [Wilson, 2001]

Strengthening the claim for high social presence notification

An initial interpretation of requirements and constraints might have led to the conclusion that the type of software to be selected should have been a traditional forum software. Software built around asynchronous linear threads of discussions, would have still met most of

the requirements. Especially since state-of-the-art forum software providers have included many features formerly associated with a social networking software.[1] Yet, after reviewing the GTP context and goals, the author decided to adopt a solution which supports more elements of social presence, thus allowing more than text-based linear threads of communication. It is further expected that especially foreign-language students will be more motivated to contribute to the community when they have the possibility to interact in various ways; not only (but including) writing longer pieces of texts in a foreign language. By supporting and recognizing students' capacities, however limited they may be, they will feel encouraged to post shorter messages (e.g. status updates) or comments on other people's profiles, even if unsure of their skills. Receiving a reply in turn is expected to lead to a feeling of success much faster. At the same time, an environment providing several levels of interaction comes closer to children's natural approach of discovering the world through experimenting and curiosity.

Therefore, the online community should reflect the structures of GTP with a group set up for each Learning Circle, but it should evolve around the overall GTP community starting page in order to underline the global dimension of GTP which goes far beyond individual learning circles. Further, each member's activities should be displayed at different places in order to support mutual awareness and provide incentives to become active as well. Students have also expressed themselves a strong wish for *making friends*[2] with their GTP partners in several surveys. Therefore, a friends list function should be implemented. This way, participants who take part several times may extend their friends network as they meet new Learning Circle partners while continuing their GTP career.

Consequently, public or group forum messages are an integral, yet partial component of modelling GTP's interconnections between participants. A traditional forum software does not primarily aim at the virtual representation of social "actions" (e.g. recent activity notifications) to an equal extent as a social networking application does. All points discussed during this part are suggestions of the author and are yet to be verified by implementing them into current GTP practice.

6.2. Critically reflecting the Approach

After having proposed a list of software applications, a critical review of the overall approach and solutions presented during this study is conducted at this point. The concerns outlined here will not be answered at this point, but are meant as discussion-provoking thoughts, which lead one step beyond the presentation of a list of software application.

[1] Compare SimpleMachines Forums with extensive support for user profiles, friends lists and multi media sharing: http://www.simplemachines.org/ (accessed: 2010 January 4, 23:37 CET)

[2] For a discussion on this concept's differing meaning across cultures, refer to chapter 4.6.3

Responsibility for a sensitive approach towards promoting western inventions of technology

The first concern is of ethical nature. One of GTP's main goals is to promote technology as a tool for improving education and teaching important skills for succeeding in the modern information society. Yet, introducing technology to a culture where ICTs have not played an equally central role as they have in the western world until now is sometimes condemned as *cultural imperialism*. [cf. Wong, 2007] This concept refers to the dominance of "western" (i.e. mainly english-speaking) culture and language in a particular field, in this case e-learning.[ibid.: 10] This is further amplified by the facts that the idea of the open web and free communication along with most hardware and software development, including the development of the Internet, originates in the United States of America (and mainly at one of the renowned universities of Berkeley, Stanfort or the Massachusetts Institute of Technology). [cf. Initiative [2009a] and Raymond [2000]] As a result, there is a knowledge gap between cultures that have been inventing software technologies for over two decades and those that have only started to adopt it recently. Only by learning to understand the standards that have been set, the latter will be able to criticise the former and come up with their own solutions to their own problems. The field of Information and Communication Technologies for Development (commonly abbreviated with ICT4D, cf. Unwin [2009]), where professionals and scholars discuss the responsibility of the technology inventing countries for overcoming this gap, is here both, solution and problem in one. Further, the outsourcing of routine jobs to traditionally less technology-driven societies (e.g. India) is common practice among software engineering companies. In these countries, concepts are adopted possibly against traditional cultural values because they have been associated with economic and social 'progress'. As a result, also this study aiming at the enhancement of cross-cultural student communication and bridging the digital divide by introducing technology in countries with varying backgrounds should consider the questions

- Is it justifiable to support the proliferation of technologies which originate in the "western world"?
- How may local ownership be encouraged?
- How is a software application's correct and sustainable implementation ensured, especially keeping in mind the multi-cultural context?

Finding a balance between cultural neutrality and adaptability in software

This leads to the second concern: Challenges for the software implementation process derived from the multi-cultural context. With its decentralised structure where country coordinators are the link between central project coordination and students and teachers, the GTP ensures that all participants are addressed and instructed by a person from their own culture.

As could be explained during this study, the concept of GTP Learning Circles is appropriate for constructing a sense of community across cultures, thus allowing a participation on equal levels by students of all cultural backgrounds. Also Wong [2007] remarks: "[...] instructional design cannot be culturally neutral simply because the process of instructional design is all about creating cultural identity." [Wong, 2007: 13]. The same applies to the design and development of a software application. As has been stated, most software standards were developed in the western world, and even the requirements engineering process used during this study is of western origin. This implies that with a centrally introduced software application, such as a GTP community software, there may be difficulties when it is adopted by culturally diverse users.

Yet, at the same time, as has been outlined in a previous chapter, the process of culture-specific appropriation of technology takes place during human-machine-human interaction independent of a technology's design. (cf. chapter 3.4.1) The example of how different cultures deal with group dynamics may outline this further. A common framework, distinguishes between those cultures where an individuals' autonomy is valued and those where interpersonal group relations are more important [cf. St.Amant, 2002]. This might lead to a difference in their appropriation of the application proposed here: a system based on individual people's profiles might not be adopted easily by all cultures. It remains to be decided whether in some countries, it is preferable not to include students' photos or only use class profiles where actions within the online community cannot be traced back to an individual. As a result, when introducing a web-based community software, although the software will inevitably show the cultural values from the engineers' culture, it should take into account possibilities for adapting it according to many diverse culture's communication behaviour.

Technology is a Means To An End

The third concern addresses, similar to the first, questions related to the introduction of technology in a learning context. GTP underlines that technology within the project should be seen as a tool for facilitating communication and collaboration rather than as a means to an end. [Riel et al., 2008: 7] Essentially, the aim of the software proposal developed during this study is to provide a means for making students' current experience of intercultural communication during learning circles more successful without imposing a technology for the technology's sake. Therefore, the technical and organisational background of the GTP were considered during the requirement analysis. Similarly, Kerres [2001] remarks that the decision on the type of an e-learning delivery system is only of secondary importance. It is more important to determine the nature and expectations of the target group, the didactic aim of the medium, and last but not least the way towards a sustainable integration into existing educational structures. [Kerres, 2001: 134] Further, Kerres points out that the planning and conceptioning of an educational learning environment should be done from

the user's perspective. [ibid.] The approach for the selection of an additional web-based communication component presented during this study was drafted with these considerations in mind. This was achieved by firstly enquiring GTP participants' needs and expectations, consequently considering restrictions and requirements imposed by the project's current context, and finally by combining these observations with theoretical concepts. Yet, a purely demand-driven development is not always the best solution either. Pedagogical aims, such as learning to use ICTs for communication purposes, were considered to the same extent, by propagating the implementation of "traditional" web-based communication environments, such as a forum component.

Survey Results are of limited Validity

Finally, as for all needs assessment and requirements analysis based on empirical data, suggestions and results are only significant to the extent to which restrictions of the respective methodology and sampling method and quality are considered. Thus, it is to be questioned whether a sampling frame of 244 responses from nine countries (first survey) and 332 from 11 countries (second survey) may appropriately account for the needs and expectations of over 10 000 students in 39 countries. Further, the statement of a need or the expression of a preference does not mean that an implementation of these results in a different context will lead to an adoption of these concepts by the user. Eventually, the success of a software implementation is determined by more factors than could be considered here. Therefore, there is no guarantee that implementing one of the proposals of this study will result in an increased interaction across classrooms and cultures or a higher degree of intercultural awareness among participants. Implications drawn in this study are thus subject to review after they have been tested in the real-world project environment.

6.3. Outlook and further Research

This part ultimately proposes consequential steps which should follow the presentation of software alternatives of this study. Moreover, it gives impulses for the direction which subsequent studies investigating the GTP or similarly-based scenarios could take.

This study went as far as to analyse the need for and suggest three alternative software applications, to discuss their advantages and disadvantages as well as to propose deliberations on challenges that might arise during an implementation. The tasks which would need to be completed if this project is taken further are described below:

A verification of those software characteristics which require extended administration rights (and could hence not be determined by the author) by consulting experts of that particular software application, or by testing it on a local installation, facilitates the final decision for one of the alternatives. From an economic point of view, it is important to

consequently estimate costs and efforts (man hours, amount and price of external expertise needed) before proceeding. After a test installation has been done and the settings have been configured according to the needs and requirements identified earlier, several usability tests should be conducted, especially among young students with relatively low ICT literacy in countries that face connectivity challenges. This allows to determine the applications' performance in different contexts as well as to adapt it to the particular needs of GTP participants.

Due to the diverse nature of the GTP, initial usability tests will not exhibit all potential difficulties. Therefore, only during a pilot test in one or two Learning Circles could the software implementation be customized further so as to avoid disappointments across all learning circles. A subsequent evaluation of pilot students' project satisfaction as well as their development with regard to intercultural awareness, language and ICT skills would finally help to determine the overall success of the effort undertaken before the use of the platform is extended to a greater part of the GTP community. On the other hand, there are a variety of starting points for further research in this interdisciplinary field of study. Those which the author deems most relevant are outlined below.

Half of the responses from the first survey in this study came from only two countries, whereas for some countries, there were only very few answers. If one is to draw more general conclusions on students' expectations towards the GTP in different countries where varying levels of ICT integration prevail, the surveys conducted during this study should be replicated with a greater number of participants which is more equally distributed across countries.

Moreover, one of the great challenges of the Global Teenager Project is to develop an instructional design which recognises the needs of many different learning and communication approaches. The question is thus, how online intercultural group interaction can be facilitated in a way that allows participants to adhere to their own communication styles by at the same time avoid misunderstandings. With differences in the use of non-verbal communication across cultures, this is a challenge already in non-virtual person-to-person communication (cf. chapter 3.2.1), but particularly worthwhile studying in a text-based online communication environment where the room for expressing culture-specific communication behaviour is much more limited.

It is further to be investigated whether or not, after the implementation of a more interactive community software application, there is a difference in students' satisfaction with the project, their frequency and skills of computer use, as well as in their intercultural awareness. Therefore, follow-up researchers might find it worthwhile to monitor pilot implementation Learning Circles and compare their increase of the factors mentioned with those of conventional Learning Circles using email or wiki communication. It would be interesting to compare if there is a difference across age groups or if a certain level of initial computer literacy has any effect on these factors.

From a pedagogical point of view, the ideal integration of web-based application of the social network type into different secondary school learning contexts is still to be investigated. Current research related to online learning often focuses on higher education scenarios. [Means et al., 2009: xi] Some research remains yet to be done in order to deduce guidelines for the successful implementation of a social software component into online group learning in secondary education, potentially even involving students with low ICT literacy.

Finally, the Global Teenager Project output (student letters, portfolios and pictures related to Learning Circle themes) poses a valuable source of reference related to what students from all over the world think of contemporary, political themes or those related to their personal experiences. This rich global insight into youth perspectives is left undiscovered at the moment. Yet, it holds promise to provide a solid database for a qualitative research approach looking into cross-cultural analysis of e.g. young people's outlook on contentious issues, such as values of life, environmental sustainability or gender equality. By not only investigating one generation of participants, but continuously monitoring the evolution of testimonies produced during each round of Learning Circles, this may even lead to a comprehensive picture of adolescents' concerns over a longer period of time.

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Appendix

First survey questionnaire

GTP first-time participants survey

Dear Participant,
Your teacher has asked you to complete this short survey. I wish to thank you for your kind help.
You are contributing to a study on student's online communication at the University of Hildesheim and you help to improve the Global Tennager Project.

Don't worry - it won't take long. Please only fill in this survey if you are a student participating in GTP for your first time!

Thank you, enjoy the survey!
For questions and results, please don't hesitate to contact me: Anne Schanz, gtpsurvey@anneschanz.de

What do you like most?

1 Below, you find a list of things to do/experience during a GTP learning circle. Please sort them from your favourite activity (highest) to your least liked (lowest).
You have to chose an order, no two can be equal.
Please number each box in order of preference from 1 to 5
__ learn about other cultures
__ tell people from other cultures what I think
__ chat with people from other cultures
__ make friends with people from different cultures during the Learning circle
__ find out what people from other cultures think about our theme

2 What other activities do you like when you participate in GTP?
If you want, write down anything else you like.
Please write your answer here:
_____
_____
_____
_____
_____
_____
_____
_____
_____

Personal Data

A few questions about yourself.

1 Have you ever participated in a GTP learning circle before September this year?
Please choose *only one* of the following:
o Yes
o No

2 In our GTP Learning Circle, we are using...
Please choose *only one* of the following:
- o Wiki
- o Email

3 Which country do you live in?
Please choose *only one* of the following:
- o Argentina
- o Bangladesh
- o Benin
- o Bolivia
- o Burkina Faso
- o Cameroun
- o Canada
- o Egypt
- o Gambia
- o Ghana
- o Hungary
- o Kenya
- o Latvia
- o Lebanon
- o Liberia
- o Macedonia
- o Madagascar
- o Mali
- o Netherlands
- o Niger Republic
- o Nigeria
- o Oman
- o Romania
- o RD Congo
- o Senegal
- o South Africa
- o Suriname
- o Uganda
- o Ukraine
- o United Kingdom
- o Zimbabwe
- o Yemen
- o Zambia

4 How old are you?
Please choose *only one* of the following:
- o 9-12
- o 13-15
- o 16-18

5 What ist the language of the GTP Learning Circle you participate in this time?
Please choose *only one* of the following:
- o English
- o French
- o Spanish
- o Arabic

6 I am a...

Please choose *only one* of the following:

- o Boy
- o Girl

Submit your survey.

Thank you for completing this survey.

Please submit by 2009-10-16

Second survey questionnaire

GTP Survey - students' online communication

Dear Participant,
Your teacher has asked you to complete this short survey. I would like to thank you for your kind help.
You are contributing to a study at the University of Hildesheim (supported by the International Institute for Communication and Development) on students' online communication and you help to improve the Global Tennager Project.

Completing the survey should not take longer than 5-10 minutes. Thank you and enjoy the survey!

For questions and results, please don't hesitate to contact me.
Anne Schanz, gtpsurvey@anneschanz.de

Personal data

Please provide a few details about yourself.

age How old are you?
Please write your answer(s) here:
I am ...years old: _____

country In which country do you live?
Please choose *only one* of the following:
- o Argentina
- o Bangladesh
- o Bolivia
- o Burkina Faso
- o Canada
- o Egypt
- o Ghana
- o Hungary
- o Latvia
- o Libanon
- o Mali
- o Netherlands
- o Romania
- o Senegal
- o South Africa
- o Ukraine
- o United Kingdom
- o Zambia

Other: _____

language Which is your first language?
Please choose *only one* of the following:
- o English
- o Spanish
- o French

o Dutch
o Arabic
o Latvian
o Hungarian
o Romanian
o Other: _____

LC Lang Which is the language of your learning circle?
Please choose *only one* of the following:
o English
o Spanish
o French
o Arabic
o Dutch

Means of communication

devices Which electronic devices do you use to communicate with your friends (in your own country or abroad)?
Please choose *all* that apply:
o telephone
o mobile phone
o computer
o none of the above
Other: _____

mobile phone What do you use your mobile phone for?
Please choose *all* that apply:
o for talking
o for writing messages
o for exchanging pictures
o for using the mobile Internet
Other: _____

place comp Where can you use a computer?
Please choose *all* that apply:
o at home
o at my friend's house
o at school
o at public locations where I can use a computer for free (telecentres/libraries)
o at public locations where I have to pay (internetcafés/locutorios/cybercafés)
o in another place

where other Where is this other place you just selected?
Please write your answer here:
_____

places_frequ Where and how much time do you spend online using computer?
Please choose the appropriate response for each item:

on my family's computer
on a friend's computer
at school
at public locations where I can go online for free (telecentres/li

at public locations where I have to pay (internetcafés/locutorios/c

own software Can you install your own software on the computer where you spend most of your time online?
Please choose *only one* of the following:
o Yes, I have already tried.
o Yes, I think so, but I have never tried.
o No, I cannot, I have already tried.
o No, I think I cannot, but I have never tried.

Software-based communication activities

soft on device What software on your computer or mobile device do you use to communicate with your friends when you are online?
Please choose *all* that apply:
o instant text messaging software (for example MSN, Yahoo messenger, ICQ, AOL messenger etc.)
o chat rooms (IRC programs)
o audio communication software (for example Skype, Google Talk, TeamSpeak)
o video communication software (for example Skype, NetMeeting)
o multi player online games (Meeting people in virtual worlds)
o other software (Browser, for example Internet Explorer/Firefox; email software; file exchanging software; etc)
Other: _____

Web-based communication activities

websites Which are your three favourite websites to communicate with friends?
Please give a web address if you know it (www.webaddress.com)
Please write your answer(s) here:
Most favourite: www.: _____
Second most fovourite: www.: _____
Third most favourite: www.: _____

activities On your most favourite website: What do you do?
Please choose *all* that apply:
o Write in forums or groups
o Read in forums or groups
o Upload photos
o Look at my friends' photos
o Upload videos
o Watch my friends' videos
o Instant text chat in groups/with several people at the same time
o Instant text chat one on one with friends
o Instant text chat one on one with people I only know from the internet
o Write private messages through a website (not email)
o Write messages that other friends can read (wall posts)
o Play games on the website
o Share links to other websites that I want to show my friends
o Search for friends
o Maintain my friends list

o Write status messages (for example about how I feel at the moment)
o Write comments on my friends' messages that everyone can read
Other: _____

social networks Of which of the following social network websites are you a member?
Please choose *all* that apply:
o myspace.com
o facebook.com
o hi5.com
o iwiw.hu
o one.lv
o hyves.net
o maktoob.com
o vkontakte.ru
o orkut.com
o tagged.com
o I am not a member of any social network website.
Other: _____

Submit your survey.

Thank you for completing this survey.

Please submit by 2009-12-31

Website ranking

74 facebook.com
45 msn.com
35 yahoo.com
27 draugiem.lv
26 one.lv
23 youtube.com
23 myvip.com
18 google.com
16 hotmail.com
17 iwiw.hu
12 bebo.com
12 hi5.com
 9 Gmail.com
 9 myspace.com
 8 skype.com
 7 boomtime.lv
 7 meebo.com
 6 inbox.lv
 6 twitter.com
 5 ebuddy.com
 5 napiszar.com
 3 freemail.hu
 3 hyves.nl
 3 xfire.com
 2 chat.hu
 2 ejkcards.t83.net
 2 frype.com
 2 netlog.com
 3 puruttya.hu
 2 stardoll.com
 1 123.love
 1 aeropostale.com
 1 agames.com
 1 andkon.com
 1 baltgames.ws
 1 blogger.com
 1 citromail.hu
 1 clubpenguin.com
 1 cyworld.co.kr
 1 d2jsp.org
 1 exchange.nbed.nb.ca
 1 face.lv
 1 family.ca
 1 friendsclub.lv
 1 gossipgirl.net
 1 gtasarp.com
 1 imagechef.com
 1 juegosjuegos.com
 1 linkedin.com
 1 live.com
 1 mail.ru
 1 marapets.com
 1 messengerfx.com
 1 miniclip.com
 1 Mixit.co.za
 1 naver.com
 1 odnoklasniki.ru
 1 orb.lv
 1 partyflock.nl
 1 poznanici.com
 1 prijateli.com.mk
 1 roblox.com
 1 rosszpcjatekok.blog.hu
 1 runescape.com
 1 serialetari.com
 1 sportacentrs.lv
 1 teveclub.hu
 1 triburile.ro
 1 tv5.org
 1 wordpress.com
 1 xwow.ro

Social Networks and legal restrictions Burkina Faso

From: Issa Boro (nzboro@yahoo.fr)
To: Abdoulaye Soumare; Charlotte Tervit; Dario Martin; Ebenezer Malcolm; Ghada Fathi; Kevin ED McCluskey; Kinga Bereczki; Lee Muzala; Ligija Kolosovska; Mary Gowers; Proshanta Kumer; Ria Kattevilder; Vera GTP; Anne Schanz
Date: Thu, 26 November, 2009 8:41:40
Cc: Bob Hofman; Eliane Metni
Subject: Re : your help appreciated again

Hi Anne,

Here is what I know on your request from Burkina Faso
1) In Burkina Faso the social network website most frequently used by students to connect to their friends is hi5. They also use Yahoo messenger more than MSN messenger.
2) So far in Burkina Faso, there is no legal restriction regarding the use of Internet and online communication. We have few specialist of Internet legislation so our webdesigner try to refer to the French legislation, but there is no restriction in the use. You can meet in a private cyber centre a very young child (around 8) using Internet alone without any control or restriction, chatting with strangers. So we just sensitize cyber centre managers to involve them in the struggle again the exposure of children to the Internet threats. Every school is free to set its own restrictions: some forbid to students the use of some tools on the school's computers, some have no restriction.

Best regards,
Issa.
--- En date de : **Mer 25.11.09, Anne Schanz *<anneschanz@yahoo.de>*** a écrit :

> De: Anne Schanz <anneschanz@yahoo.de>
> Objet: your help appreciated again
> À: "Abdoulaye Soumare" <asoumare2002@yahoo.fr>, "Charlotte Tervit" <ctervit@gmail.com>, "Dario Martin" <dariomartin21@yahoo.com.ar>, "Ebenezer Malcolm" <malcolmgh@yahoo.com>, "Ghada Fathi" <dgwy72@yahoo.com>, "Issa Boro" <nzboro@yahoo.fr>, "Kevin ED McCluskey" <Kevin.McCluskey@gnb.ca>, "Kinga Bereczki" <bkinga@amoba.ro>, "Lee Muzala" <leemuzala@yahoo.com>, "Ligija Kolosovska" <lika_kolos@apollo.lv>, "Mary Gowers" <mary@iearn.org.uk>, "Proshanta Kumer" <proshanta2007@yahoo.com>, "Ria Kattevilder" <r.kattevilder@ict-edu.nl>, "Vera GTP" <sbv@katonaj-bp.sulinet.hu>
> Cc: "Bob Hofman" <b.hofman@ict-edu.nl>, "Eliane Metni" <eliane.metni@gmail.com>
> Date: Mercredi 25 Novembre 2009, 10h15
>
> Dear GTP coordinators,
>
> As promised, I am now preparing a second survey, which is a bit longer than the first. I have prepared the English one and am in the process of getting it translated into French and Spanish. I hope to be able to send out the questionnaire by next week at the latest. The responses to my first survey have greatly helped me and I would again kindly appreciate your support in forwarding this survey to participanting school classes. This time, it doesn't matter if they are first-time participants. More detailed instructions will follow once I have finished setting up the survey.
>
> **As coordinators and GTP experts, I would like to ask you all two questions**. With your answers you would help me identify some valuable insights into GTP everyday reality.
>
> 1) Which are the tools and/or websites that students in your country mainly use to connect to their friends via the Internet (e.g. social network or community websites like Facebook or chat software like MSN messenger)
>
> 2) Do you know if there are legal restrictions in schools in your country regarding the use of the Internet and online communication (use of social network websites, chatting) in particular? How old do students need to

be in general in order to be allowed to use such online services? Are there national rules or does it depend on provincial law or the schools themselves?

I am looking forward to your valuable answers, as you prefere: in English, en Français, en Español...
Kind regards,
Anne

Social Networks and legal restrictions Canada

From: McCluskey, Kevin (ED) ()
To: 'Anne Schanz'; Abdoulaye Soumare; Charlotte Tervit; Dario Martin; Ebenezer Malcolm; Ghada Fathi; Issa Boro; Kinga Bereczki; Lee Muzala; Ligija Kolosovska; Mary Gowers; Proshanta Kumer; Ria Kattevilder; Vera GTP
Date: Wed, 25 November, 2009 12:13:37
Cc: Bob Hofman; Eliane Metni
Subject: RE: your help appreciated again

In New Brunswick Canada, for students, all internet chat sites are blocked by policy as well as Facebook doing the hours of school. In some Provinces, Utube is also blocked but it is not blocked in our Province. There are no national rules in Canada and each province or Territory makes their own rules.

Facebook and Utube are very popular as well as myspace. I am in the process of collecting additional information which am prepared to share about Grade 6 students and grade 9 students if that would be of interest.

I would be happy to send out your phase two survey when it is ready

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From: Anne Schanz [mailto:anneschanz@yahoo.de]
Sent: November-25-09 5:16 AM
To: Abdoulaye Soumare; Charlotte Tervit; Dario Martin; Ebenezer Malcolm; Ghada Fathi; Issa Boro; McCluskey, Kevin (ED); Kinga Bereczki; Lee Muzala; Ligija Kolosovska; Mary Gowers; Proshanta Kumer; Ria Kattevilder; Vera GTP
Cc: Bob Hofman; Eliane Metni
Subject: your help appreciated again

Dear GTP coordinators,

As promised, I am now preparing a second survey, which is a bit longer than the first. I have prepared the English one and am in the process of getting it translated into French and Spanish. I hope to be able to send out the questionnaire by next week at the latest. The responses to my first survey have greatly helped me and I would again kindly appreciate your support in forwarding this survey to participanting school classes. This time, it doesn't matter if they are first-time participants. More detailed instructions will follow once I have finished setting up the survey.

As coordinators and GTP experts, I would like to ask you all two questions. With your answers you would help me identify some valuable insights into GTP everyday reality.

1) Which are the tools and/or websites that students in your country mainly use to connect to their friends via the Internet (e.g. social network or community websites like Facebook or chat software like MSN messenger)

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I am looking forward to your valuable answers, as you prefere: in English, en Français, en Español...
Kind regards,
Anne

Social Networks and legal restrictions Latvia

From: Ligija Kolosovska (lika_kolos@inbox.lv)
To: anneschanz@yahoo.de
Date: Sun, 13 December, 2009 20:27:24
Subject: Re: FW: your help appreciated again

Dear Anne,

I apologize for the delay with the answer. I have been studying on online courses for a month and a half and didn`t have time. However, I forwarded your request to the Latvian teachers who participated in the LC and hope you will have response from them and their students.

Answering your questions, I can tell you that our students use a web-site www.draugi.lv (means friends) and Google which are the most popular ways.

As to restrictions, I don`t know any although there may be some in some schools which depends on the school.

I wish you success in your work and all the best.

Ligija

Quoting **Ligija Kolosovska <lika_kolos@apollo.lv>**:

From: Anne Schanz [mailto:anneschanz@yahoo.de]
Sent: Wednesday, November 25, 2009 11:16 AM
To: Abdoulaye Soumare; Charlotte Tervit; Dario Martin; Ebenezer Malcolm; Ghada Fathi; Issa Boro; Kevin ED McCluskey; Kinga Bereczki; Lee Muzala; Ligija Kolosovska; Mary Gowers; Proshanta Kumer; Ria Kattevilder; Vera GTP
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Kind regards,
Anne

Social Networks and legal restrictions United Kingdom

From: Mary Gowers ()
To: 'Anne Schanz'
Date: Wed, 25 November, 2009 11:29:39
Subject: RE: your help appreciated again

Hi Anne

Answers to your questions

> 1) Which are the tools and/or websites that students in your country mainly use to connect to their friends via the Internet (e.g. social network or community websites like Facebook or chat software like MSN messenger)

The answer to this is they use everything, Facebook (and Bebo for the younger ones), text messaging virtually non-stop and MSN, even Twitter. Those who are "switched on" will use a wide variety depending on where they are, how much connectivity they have etc. BUT there are students who are not connected in this way – we must not forget that not everybody has access, or wants it.

2) Do you know if there are legal restrictions in schools in your country regarding the use of the Internet and online communication (use of social network websites, chatting) in particular? How old do students need to be in general in order to be allowed to use such online services? Are there national rules or does it depend on provincial law or the schools themselves?
This is quite complicated. There is no law as such but there is a duty of care and virtually all schools interpret this to mean preventing students accessing on-line communication whilst they are at school. In many cases this even extends to email. Most systems will block Facebook etc, MSN, Skype, in fact just about anything that has an interactive component. We had to have the Wiki sites unlocked by IT providers so that schools could take part in GTP. Rules are generally set at the Local Authority (equivalent to City) level but there is little variation across the country.

As a result of this little work is done to prepare students for using such sites responsibly when they are out of school. We consider this to be a major issue.

When you have compiled the information from all the GTP countries I would be very interested in seeing a summary if possible. We feel that we are the most strict in these issues but it would be interesting to see if we are.

Hope this helps
Mary

From: Anne Schanz [mailto:anneschanz@yahoo.de]
Sent: 25 November 2009 09:16
To: Abdoulaye Soumare; Charlotte Tervit; Dario Martin; Ebenezer Malcolm; Ghada Fathi; Issa Boro; Kevin ED McCluskey; Kinga Bereczki; Lee Muzala; Ligija Kolosovska; Mary Gowers; Proshanta Kumer; Ria Kattevilder; Vera GTP
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Kind regards,
Anne

Social Networks and legal restrictions The Netherlands

From: Ria Kattevilder (r.kattevilder@ict-edu.nl)
To: 'Anne Schanz'
Date: Wed, 2 December, 2009 11:31:13
Subject: RE: your help appreciated again

Hi Anne,

The answers for The Netherlands:

1) Which are the tools and/or websites that students in your country mainly use to connect to their friends via the Internet (e.g. social network or community websites like Facebook or chat software like MSN messenger)
Answer: Hyves, MSN, Facebook, Twitter.

2) Do you know if there are legal restrictions in schools in your country regarding the use of the Internet and online communication (use of social network websites, chatting) in particular? How old do students need to be in general in order to be allowed to use such online services? Are there national rules or does it depend on provincial law or the schools themselves?
Answer: In most primary and secondary schools, above social networks can't be reached from school computers. It is up to the school to decide this. More and more students in secondary schools have internet connection on their mobiles. Most schools have rules for use of mobiles (calls, sms, internet) during school hours. These rules are mostly: mobiles are switched off during school hours except during mid-morning and lunch breaks.

Hope this will help you, good luck with your thesis.
Take care,
Ria

Ria Kattevilder
Project coördinator ICT&E
Country Coordinator GTP
The Netherlands

T +31 (06) 14681274
Email
I www.ict-edu.nl
Skype: ria_kattevilder
email disclaimer

-----Original Message-----
From: Anne Schanz [mailto:anneschanz@yahoo.de]
Sent: woensdag 25 november 2009 10:16
To: Abdoulaye Soumare; Charlotte Tervit; Dario Martin; Ebenezer Malcolm; Ghada Fathi; Issa Boro; Kevin ED McCluskey; Kinga Bereczki; Lee Muzala; Ligija Kolosovska; Mary Gowers; Proshanta Kumer; Ria Kattevilder; Vera GTP
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Kind regards,
Anne

Social Networks and legal restrictions Hungary

From: sbv@katonaj-bp.sulinet.hu ()
To: Anne Schanz
Date: Sat, 5 December, 2009 18:02:11
Subject: Re: your help appreciated again

Dear Anne,
Sorry to answer so late, but I had so many things to accomplish that I forgot about it.
I hope these answers arrive on time.
1. My students usually use Windows Live Messenger, Skype or ebuddy.com for chatting. They are on some community websites like Facebook, netlog, myvip.com and iwiw.hu. These two are the main sites they use.
2. I don't know any strict rules for joining these sites, they are usually open for everyone. Only parents can forbid it, I think. At schools it can be used.
(As I mentioned in JKF the only problem with my school is, that all those sites, where there are particular words or parts of these (in connection with sexual matters etc.) which have these in their address, are forbidden. So www.globalteenager.org can't be seen there because of "teen". It is very starnge.)
I hope, the answer is usable for you.
Have a nice weekend.
Vera

Email Margaret Riel

From: Margaret Riel (mmriel@gmail.com)
To: Anne Schanz; Barry Kramer
Date: Wed, 16 December, 2009 22:55:40
Subject: Re: Introductions

Hi Ann,

I will respond to the questions in the text....

On Fri, Dec 4, 2009 at 7:49 AM, Anne Schanz <anneschanz@yahoo.de> wrote:

> Dear Dr Riel,
>
> thank you for your quick response to Eliane's introduction. As she mentioned, I am writing my thesis (German 'magister', equivalent to a master's) on web-based communication within GTP. I would like to hear your ideas on three questions.
>
> I am going to analyse students' subjective self-evaluation of their goal achievement and reasons for participation in order to map their answers to the five goals stated in the Teacher's Guide. I am then trying to identify potentials for development and improvement especially with regard to communication. From a methodological point of view - what do you think of this approach?

Well I guess that it would be more important to see if the teachers objectives were meet. There may be very different reasons for participating in learning circles and their reasons are important. You might want to contact Barry Kramer. He had a hard time making the choice between looking at student or teacher learning. He finished his dissertation on teacher expectations. I know you will enjoy reading it. I have added him so he might also respond to your questions. (Also you might like taking a look at onlinelearningcircles.org (I have described the model in detail their.)

> I would also like to know if these goals are based on any particular (or several) documents or pedagogical theories or if they are a result of an aggregation of contributions by the paper's authors. During my literature research, I found that they certainly go in line with some learning theories or teaching methods such as Dewey's project method or situated learning or in parts even with Downes' and Stephen's rather controversial connectivism. I'll copy the goals again below this message for you so you don't have to search.

(added comments at the end as well)

> A third question concerns your view on interaction within Learning Circles. At the moment, in GTP Learning Circles, most interaction and communication takes place within class rooms between students and teachers of one class during discussions of their own contributions. In the end, online postings are a product of the entire group. There are no real 'threads' of communication where different views are discussed. I understand that this would be hard to realize between groups. Do you think there is room for integration of a component that supports more individual, and thus more interactive communication? Do you know if individual communication components are applied anywhere in other projects using Learning Circles?

Yes they are and I would refer you online to the onlinelearningcircles.org and knowledge building. The dialogue is essential for the learning, but it can happen in the classroom ro across classrooms and does. I look forward to finding out what you learn.

> Thank you in advance for your thoughts!
> Kind regards,
> Anne Schanz
>
> **The Global Teenager Learning Circle: Goals for Teachers and Students (Teacher's Guide, p.6)**

Share Individual, Regional, and Cultural Perspectives

- Promote intercultural and regional understanding and sensitivity
- Understand how regions are similar and different
- Explore issues of national and global significance

(this is pretty clear-- learning circles were a different approach to global learning. On the onlinelearningcircles.org site, you will see where it is being used for global education to prepare students from learning abroad programs.)

Foster Problem-Solving and Critical Thinking Skills

- Engage students in thoughtful choice of a question for the Learning Circle
- Involve students in research as they respond to questions
- Develop students' ability to collect, interpret and present information to others
- Improve map reading skills as students locate the Circle schools

Here I would say that I was drawing on the problem-based learning literature and from constructivist theory of learning.

Enhance Communication Skills

- Encourage students to use writing to share ideas with others
- Provide opportunities to read, evaluate and edit the work of others
- Promote writing across the curriculum

Communication is an important part of learning. You don't really own knowledge until you can share it with someone else.

Develop Co-operative and Collaborative Work Strategies

- Learn to work as members of a team with peers in other places
- Understand responsibilities that come with group participation
- Learn how to work co-operatively with partners in distant locations.

This comes from social constructivist views that working with others leads to internalization and transfer of knowledge.

Learn to use Telecommunications Technology

- Understand how computers are used to exchange information
- Gain experience in working with computers
- Be aware of 'Netiquette' in electronic communication

Understanding technology is not a direct goal but a positive outcomes from the work.

You might enjoy this paper....

Riel, M. (1993), The SCANS Report & the AT&T Learning Network: Preparing students for their future. *Telecommunications in Education News,* **5** (Fall) 10-16.

I thought I had a copy of it... but I guess not....too many computers ago. But look at the Secretary's Commission on Achieving Necessary **Skills** (**SCANS**).
(1991). What work requires of schools: A **SCANS report** for America 2000. Washington, DC: US Department of Labor. Tinsley, HEA & Tinsley, DJ (1987).

you will see that some of these overlapp... When the scans report can out, I saw that it could validate our my approach.

From: Margaret Riel <mmriel@gmail.com>
To: emetni <emetni@iea.org.lb>
Cc: Anne Schanz <anneschanz@yahoo.de>; bob Hofman <b.hofman@ict-edu.nl>
Sent: Fri, 4 December, 2009 7:40:28
Subject: Re: Introductions

Sure I am happy to talk with her. I will look to see if she has written me. I am behind in email and have about 50 unread messages. But I will keep my eyes open. If I don't respond quickly, send me another message.

Margaret

On Thu, Dec 3, 2009 at 2:21 AM, Eliane Metni <emetni@iea.org.lb> wrote:

> Dear Margaret,
>
> I would like to introduce Anne Schanz doing her research thesis focused on the Global Teenager Project. She is currently visiting the Learning Circle teachers guide she has key questions about the goals stated in it; we thought it is best to put her in direct contact with you the author of the guide!
>
> Anne has contributed tremendously to the Global Teenager Project website and has participated at the last GTP Networking event (JKF) where she met the GTP country coordinators.
>
> We all know how busy you are but I still hope that you can fit time to address Anne's questions about the Learning Circle!
>
> Best regards,
> Eliane
>
> N/B: I will dedicate time to contribute to the LC site and link up from our sites as well

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~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Margaret Riel <margaret.riel@sri.com>
Sr. Researcher, Center for Technology in Learning SRI-International
Co-Chair M. A in Learning Technologies Pepperdine University
Phone: (760) 943-1314
http://faculty.pepperdine.edu/mriel/office
BLOG: http://mindmaps.typepad.com/
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Answer mapping coding instructions

Liebe Helfer,

ihr habt euch freundlicherweise bereit erklärt, mich bei meiner Magisterarbeit zu unterstützen. Dafür schon einmal vielen lieben Dank. Im Rahmen meiner Arbeit untersuche ich online-Kommunikation von Teilnehmern eines interkulturellen Lernprojektes, das Schulklassen aus 30 Ländern über das Internet vernetzt. Beim Global Teenager Project werden in Teams von ca. 5 Schulklassen, sogenannten Learning Circles, über ca. 10 Wochen von jeder Klasse zu einem bestimmten Thema Fragen formuliert. Jede Klasse beantwortet anschließend die Fragen aller anderen und fasst zum Schluss die erhaltenen Antworten zur eigenen Frage zusammen. Ergebnisse werden auf einer Wikiseite gespeichert oder per Email ausgetauscht. Mehr informationen über das Projekt findet ihr unter www.globalteenager.org

Bei dieser Aufgabe nun geht es um Folgendes: Teilnehmer zu ihren Gründen für die Teilnahme befragt, sowie ob und warum sie ihre eigenen Ziele erreicht haben. Dies soll nun abgegelichen werden mit den Zielen, die sich das Projekt selbst gesetzt hat. Dafür findet ihr unter diesem Link

www.anneschanz.de/gtp-mapping

eine Eingabemaske.

1) Bitte meldet euch mit eurem **Namen** an (der wird nicht durch ein Passwort validiert, nicht mit den Ergebnissen in Zusammenhang gebracht und dient nur für Rückfragen meinerseits) und wählt eine **Sprache** aus. Ihr erhaltet dann nur Datensätze, die in der jeweiligen Sprache verfasst wurden.
2) Auf der folgenden Seite Werden euch die Freitextantworten angezeigt. Das können Antworten zu **beiden** oder nur **einer** der Fragen sein.
3) Direkt darunter findet ihr die Zielkategorien. Jede der fünf Hauptkategorien enthält Unterpunkte, die bei der Einordnung helfen könnnen. **Bitte lest euch alle Kategorien vor Beginn gut durch.**
4) Bei der Zuordnung geht es um **beide** Freitextantworten. Bitte kreuzt **so viele** Kategorien an, wie euch **zutreffend** erscheinen. Dafür könnt ihr mit der Maus in die Kästchen klicken oder auch die angegebenen Tastaturkürzel verwenden, wenn euch das bequemer scheint. (Firefox: shift+alt+Zahl; Internet Explorer: nur alt+Zahl)
5) Anschließend gelangt ihr durch einen Klick auf '**speichern**' zum nächsten Datensatz.
6) es ist **kein Ausloggen** oder Abmelden nötig, das Browserfenser kann einfach geschlossen werden.

Wichtige Hinweise:

- Die Bedeutungen der Oberkategorien **beschränken sich nicht** auf die Bedeutungen der Unterkategorien. Es können durchaus Antworten zugeordnet werden, die zu keiner der Unterkategorien, aber zur Bedeutung der Oberkategorien passen. (z.B. ist ein häufig genannter Grund, die Fremdsprachenkenntnisse zu verbessern. Dies kommt aber in keiner der Unterkategorien vor, lässt sich aber einer der Oberkategorien zuordnen)

- Bitte versucht **nicht, zwingend eine passende Kategorie** zu finden. Manchmal ist dies nicht möglich, dann können alle Kästchen frei gelassen werden. Wenn ein Fall unklar ist oder es Probleme bei der Zuordnung gibt, kann ein Kommentar eingetragen werden. Dies gilt auch falls die Sprache falsch zugeordnet wurde. Alle Datensätze mit Kommentar gehe ich noch einmal durch.

- Die Menüpunkte in der ersten Zeile haben für euch keine Bedeutung.

Bei Fragen wendet euch bitte an mich. Vielen Dank für eure Mithilfe,
Anne

Chat experiences Latvia

From: Ligija Kolosovska (lika_kolos@inbox.lv)
To: anneschanz@yahoo.de
Date: Sun, 13 December, 2009 20:40:15
Subject: Re: FW: your experiences with GTP chat

Dear Anne,

Answering your second question, I must say that chats were rarely successful and the reasons are several. Sometimes teachers had problems accessing the platform, often you had to wait as nobody was in the chat room and it was just waste of time waiting. Even if a chat happened, the communication was often not really meaningful. A couple of times I myself had cases of witnessing dirty talks and felt extremely uncomfortable and ashamed facing my students. All in all, I don`t miss chat the way it was.

The reasons of such situation could be tachnical difficulties in some countries, teachers who didn`t supervise the chat, difficulties connected with different time zones and schedules.

If we want to bring back the chat, we need to motivate firstly teachers and this could be done by making chat a condition for successful participation in a competition as the one Bob mentioned at JKF.

This is what I think. Hope it will help.

Best wishes,

Ligija

Quoting **Ligija Kolosovska <lika_kolos@apollo.lv>**:

From: Anne Schanz [mailto:anneschanz@yahoo.de]
Sent: Wednesday, November 25, 2009 12:10 PM
To: Ebenezer Malcolm; Issa Boro; Ligija Kolosovska; Kinga Bereczki; Charlotte Tervit
Cc: Bob Hofman; Eliane Metni
Subject: your experiences with GTP chat
Dear Ligija, Kinga, Charlotte, Issa, Ebenezer,

Please excuse my many emails, but you could help me once more if you briefly told me about your experiences with GTP chat. As I heard from Bob and Eliane, things with the chat didn't work out the way they were supposed to, and chat is no longer used during Learning Circles.

What do you think were the **reasons** for this?
Do you have any ideas on **how to improve** a possible future chat session (thinking about group organisation, chat software, training...)?

Thank you for your thoughts!
Kind regards,
Anne

Eigenständigkeitserklärung

Hiermit erkläre ich, dass ich die vorliegende Arbeit selbstständig abgefasst und nicht anderweitig zu Prüfungszwecken verwendet habe. Weiterhin erkläre ich, dass ich die Arbeit ausschließlich unter Verwendung der angegebenen Quellen und Hilfsmittel erstellt und alle wörtlichen und sinngemäßen Zitate aus diesen Quellen geeignet gekennzeichnet habe.

Anne Schanz
Berlin, den 31. Januar 2010