



Royal Tropical Institute

Development through dialogue

Report of a research initiative

Sarah Cummings

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Acronyms

CIDA	Canadian International Development Agency
CTA	Technical Centre for Agricultural and Rural Cooperation
DAC	Development Assistance Committee, OECD
DANIDA	Danish International Development Agency
CGIAR	Consultative Group for International Agricultural Research
FAO	Food and Agriculture Organization of the United Nations
ICA	Institute for Connectivity and the Americas
ICCO	Interchurch Organization for Development Cooperation
IDRC	International Development Research Centre, Canada
INASP	International Network for the Availability of Scientific Publications
ILS	Information & Library Services, KIT
KIT	Royal Tropical Institute
MDGs	Millennium Development Goals
OECD	Organization for Economic Cooperation and Development
PDF	Portable Document Format
SDC	Swiss Agency for Development and Cooperation
SIDA	Swedish International Development Cooperation Agency
UNAIDS	Joint UN Programme on HIV/AIDS
URL	Uniform Resource Locator [identifies Internet address]

Executive summary

This report covers a research study of Dgroups which took place during September 2006-July 2007. Dgroups is a number of things at the same time: (1) it is a web-based technical platform which supports and provides for the creation and use of discrete e-mail based discussion lists and web workspaces that are used to support knowledge networking by people and institutions working in development; (2) it is also the plural name for these online networks, individually known as a dgroup; and (3) it is also a partnership of development organizations who share a commitment to collaboration in development and who are developing a common vision of the need for such a platform and such online groups.

The Dgroups platform currently supports 2,308 dgroups and 88,700 individual users (15 July, 2007), but there has not yet been an analysis of the development role of dgroups on a global scale. Many partners and members of the Dgroups Partnership continue to support the platform, not only because of the access to online knowledge networks with which it provides them, but also because of an intuitive understanding of the processes supported by dgroups.

The study examines whether and how dgroups:

- facilitate the spread of information and knowledge among the actors (individual and institutional) working in the thematic areas of the Millennium Development Goals (MDGs);
- facilitate learning processes (individual, social, and organizational learning) in the diverse institutions working in areas related to the MDGs; and
- facilitate the bridging of the multitude of 'knowledge divides' in development between the North and South, and South-South; between different sorts of institutions (multilateral, bilateral, NGOs, universities, ministries) and professional groups (practitioners, researchers and policymakers); and in terms of language.

Data were collected in the first half of 2007 by questionnaire surveys of administrators and moderators, interviews with representatives of partners and member organizations of the Dgroups Partnership, and a focus group meeting of lurkers. Additional data comprises web statistics covering the use of dgroups and secondary sources, including a 'characterization' of dgroups in Latin America and the Caribbean which took place in 2004 (*Lo and Salas 2004*).

The number of dgroups has grown at linear rate since its creation in 2002. The number of additional groups per year has been around 500 each year for the past four years. The number of individual users of dgroups has grown at a non-linear, sigmoid rate, consistent with the trend in adoption of new technology identified in the theory of the diffusion of innovations (*Rogers 1962*). The highest number of additional users (26,993) joining the platform was in 2006. Estimates for 2007 may indicate that while dgroup creation remains roughly the same, the number of new users may peak at 26,000 for the year. Whether the trend in the number of additional users will then decline is unknown. There is evidence that there are fields, notably academia, where penetration of dgroups is very low (*personal communication, Ton Dietz, January 2007*), indicating that there are still areas for possible expansion of the numbers of both groups and users.

It has been concluded that dgroups facilitate information and knowledge sharing within the subject areas of the Millennium Development Goals (MDGs), and that they also facilitate individual, social and organizational learning within these subject areas. Dgroups also play an important role in bridging the 'knowledge divides' between North and South, between different types of institutions, and between different professional groups, as well as crossing the

digital divide. An ability to bridge South-South divides and to forge links between different language groups has not been demonstrated.

In terms of development impact, Dgroups was found to represent a very cost-effective manner of hosting groups (an average of Euro 60.70 per dgroup per year) and most moderators felt that participation in dgroups was an 'effective' use of their time. Dgroups were also found to have had an organizational impact on the way many of the partner and member organizations work. It is argued that Dgroups provides a unique resource: there is nothing comparable within development that facilitates information and knowledge sharing on such a large scale. Finally, some recommendations are made for the future development of Dgroups.

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1 Introduction

Dgroups is a tool, which is simple to use, requires a low bandwidth, is free of publicity, and has the endorsement of a partnership of organizations working in development themes. These are all characteristics that make it an excellent choice for an important group of social organizations.
(Lo and Salas 2004)

Dgroups has, in many ways, been an extraordinarily successful initiative: one assumes that it has facilitated a vast amount of knowledge sharing and learning in the development field. The number of groups and **users**¹ has grown enormously since its creation in 2001, reaching 2308 groups with 88,700 individual users by mid-July 2007. But, in many ways, Dgroups is like a black box². Who are the users? What are the dgroups doing? Who is starting the networks? What is the South-North balance? Although many users, **moderators** and **architects** may have partial answers to these questions, the evidence remains largely anecdotal. At the meeting of the Dgroups Partnership in January 2007, it became clear that even individuals who were representing partner and member organizations had a very poor overview of the basic facts of Dgroups' use, probably because the current **platform** does not facilitate such insights.

Since the analysis of dgroups in Latin America in 2004 (Lo and Salas 2004), there has been no large-scale effort to analyse dgroups users and uses. This has a number of dangers, one being that partners and members are buoyed up by a belief in the efficacy and approach of dgroups, but do not have the hard facts needed to guarantee the support of policymakers. As Maarten Boers of ICCO noted in an e-mail on 26/01/06 to the Dgroups Partnership dgroup [www.dgroups.org/groups/dqpartners]:

In fact, the decision within ICCO to want to become a partner was mainly based on 'intuition', some more concrete information about the inside of the 'black box' would have been useful.

This quote to some degree demonstrates partner and member organizations' commitment to Dgroups and the intuition or gut feeling which informs many of those involved in dgroups of their unique contribution to development. This is summed up in an e-mail by Neil Pakenham-Walsh to the dgroup for English speaking **administrators** [www.dgroups.org/groups/administrators-en]:

There is massive potential in maintaining and fostering a large 'family' of discussion groups related to international development, and this is the strength and opportunity of Dgroups.

We have been running large discussion lists (more than 500 members each) on Dgroups for about five years and one of the wonderful things about it is that we have been able to spend around 99.9% of our time on what we are here for - facilitating communication among our members - and only 0.01% on technical issues. That's all thanks to Sarah, Zhang, and the technical staff of Bellanet who handle all the technical side for us. And it's not just us of course – it's simply amazing that just two people are enabling and saving so much time not only for us but for 2264 other

¹ When a term appears in bold, it is defined in the 'Key concepts' section (see paragraph 2.4). The exception to this is, of course, headings and the titles of figures.

² Black box is a technical term for a device or system or object when it is viewed primarily in terms of its input and output characteristics. (Wikipedia, July 2007)

groups with over 80,000 members! It means that thousands of us can focus our time and energy on the work we need to do - international development communications.

This study tries to translate this intuition regarding the role of dgroups in development into hard facts. It will examine:

- whether dgroups facilitate the spread of information and knowledge among the actors (individual and institutional) working in the thematic areas of the Millennium Development Goals (MDGs);
- whether dgroups facilitate learning processes (individual, social, and organizational learning) in the diverse institutions working in areas related to the MDGs; and
- whether dgroups are able to breakdown the multitude of 'divides' in development between different sorts of institutions (multilateral, bilateral, NGOs, universities, ministries); professionals in terms of local, national, international focus and type of expertise (practitioners, researchers and policymakers); North-South and South-South; and language.

This is the first global attempt to look at the development role of Dgroups and it will try to draw some conclusions regarding the development impact of the dgroups it hosts, and whether it is unique in character.

This research report will be further focused to form an academic paper to be submitted to a peer-reviewed journal. It has been supported by the Information & Library Services (ILS) of the Royal Tropical Institute (KIT) [www.kit.nl], through financing provided by the Dutch Ministry of Foreign Affairs [www.minbuza.nl].

1.1 What is Dgroups?

Dgroups is a number of things at the same time: (1) it is a web-based technical platform which supports and provides for the creation and use of discrete e-mail based discussion lists and web workspaces that are used to support knowledge networking by people and institutions working in development; (2) it is also the plural name for these online networks, individually known as a dgroup; and (3) it is also a partnership of development organizations who share a commitment to collaboration in development and who are developing a common vision of the need for such a platform and such online groups.

For ease of reference, this study will use Dgroups, with a capital letter, when referring to the partnership and/or the technical platform, and dgroups with lower case letter when referring to one or more online groups. Where a particular group is mentioned in the text, the URL will be listed in square brackets after the name. Kindly note, however, that not all the dgroups listed are publicly accessible.

The technical platform allows the creation of individual e-mailing lists, which is the core application, supported by a discrete website (also called a workspace). (*personal communication, Peter Ballantyne, July 2007*). Each website lists the members who have access to the dgroup, and members can also add 'resources' which comprise computer files (document files in WORD, Excel or PDF format, illustrations in jpg or gif format and also, in some cases, sound files and films) and URL links to websites. Users generate e-mails which are sent to all members of the dgroup, including themselves. This e-mail traffic is one of the aspects which makes Dgroups a particularly suitable medium for users with low connectivity in the countries of the global South, because many

of them are still able to receive the e-mails generated by the dgroup even if they are not able to go online to consult the website itself. The combination of mailing-list based communication, with extra functionalities in a simple and accessible website, allows those users with low bandwidth to fully participate in the dgroup (*personal communication, Andrew Nadeau, January 2007*). Initially, each dgroup could also use a calendar function but this was rarely used in practice. It was, however, a core part of the vision of the purpose of Dgroups, i.e. avoiding replication by sharing more information on events taking place (*personal communication, Julie Ferguson, July 2007*).

Each dgroup is brought into being by a so-called **creator** who works for one of the partner or member organizations. To make a new dgroup, a creator needs a certain amount of information about the proposed short and long names, thematic focus and settings relating to whether the dgroup is accessible to everyone or only to the users listed on the website. When these details have been ascertained, usually by means of a standard form, the creator can create an individual website in a matter of minutes. Partner and member organizations are also able to give their own design to dgroups with a so-called 'skin'. This gives the dgroup the identity of the organization itself, rather than that of Dgroups.

A distinction should be noted here between the partners and members of the Dgroups Partnership who are able to create dgroups and contribute to the operation of the platform. They are motivated both by a private need for groups to support their own work and, at the same time, a commitment to a global public good by supporting a platform that is used by many actors across the development sector. Indeed, many thousand of users may actually have no conception of the Dgroups Partnership or of its philosophy (*personal communication, Peter Ballantyne, July 2007*).

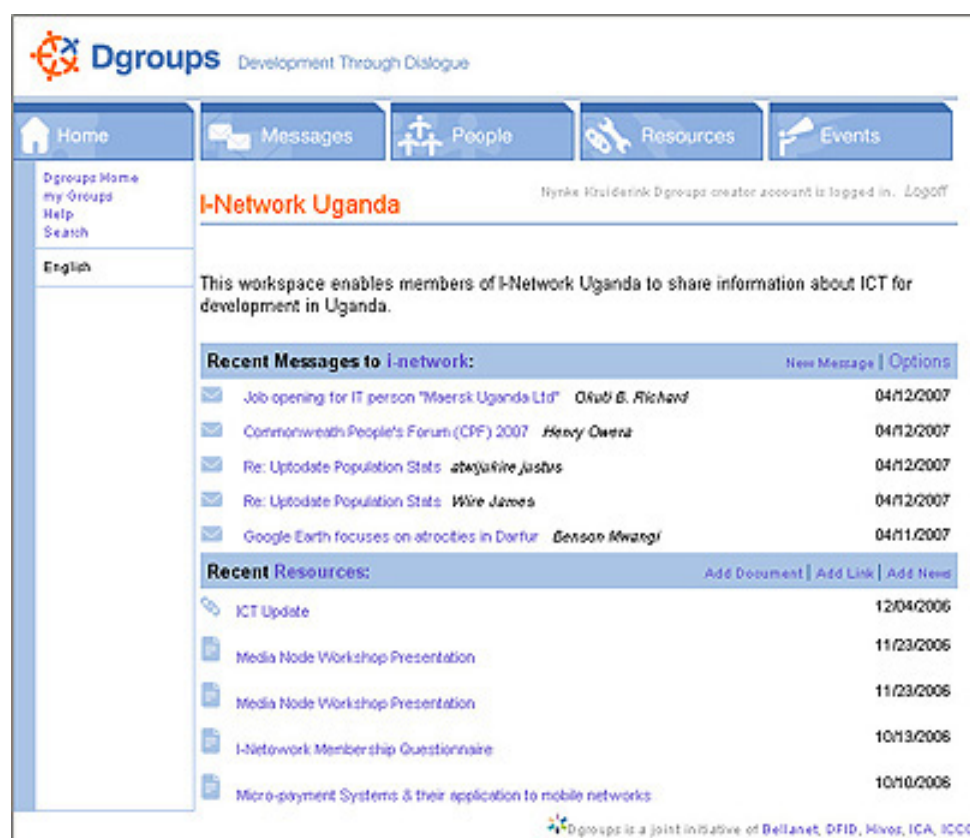


Figure 1 Screenshot of a dgroup homepage

The strengths of Dgroups over commercial alternatives (Google groups, Yahoo groups, Blackboard groups) include:

- Individuals and organizations have access to a wide range of dgroups to meet their knowledge and communication needs on one platform. Access to these can be standardized through the 'my dgroups' page on the Dgroups platform at: www.dgroups.org.
- The e-mail feature, mentioned above, makes it ideal for communicating with members with low bandwidth in the South.
- Many dgroups focus on socially sensitive (HIV/AIDS etc.) and politically sensitive (human rights, freedom of the press) issues which could make Dgroups subject to the same censorship and disclosure pressures that other Internet service providers are facing from governments. Google, Microsoft, Yahoo and Skype have, for example, been criticized for censorship and disclosure as a result of pressure from the Chinese government (*Human Rights Watch 2006*). However, the fact that Dgroups is the result of a partnership of mainstream development organizations means that it has been never subject to such pressures. In the opinion of the researcher, even if such pressures were forthcoming, the partner and member organizations would be in a position to resist them.
- There is tremendous potential in having all online development groups on one platform, in terms of linking initiatives and sharing information and knowledge resources. This potential has not yet been tapped.

2 Objectives of the research study

This research study aims to examine the role of knowledge networks in development. In this case, the knowledge networks under consideration are dgroups. Based on these deliberations, the study will aim to make a number of conclusions on the impact of knowledge networks on development. This assumes that each dgroup is a knowledge network, although this is, in fact, not the case. For example, a dgroup can be the virtual manifestation of a knowledge network, but it sometimes represents an ad hoc grouping of individuals working together. To complicate the picture further, some knowledge networks, and a good example of this is the Knowledge Management for Development network [www.km4dev.org], may have more than one dgroup. Often the information and knowledge sharing taking place through the dgroup may be the 'tip of the iceberg' of actual offline and face-to-face sharing. For the purposes of this study, dgroups will be used as a proxy for knowledge networks.

The study is based on the following hypotheses and study questions. The study questions can be reviewed in more detail, in combination with appropriate data collection instruments, in Appendix 2.

2.1 Hypotheses

1. Knowledge networks such as dgroups facilitate the spread of information and knowledge among the actors (individual and institutional) working in the thematic areas of the Millennium Development Goals (MDGs).
2. Knowledge networks facilitate learning processes (individual, social, and organizational learning) in the diverse institutions working in areas related to the MDGs.
3. Knowledge networks are able to break down the multitude of 'knowledge divides' in development between:
 - North-South and South-South;
 - different sorts of institutions (multilateral, bilateral, NGOs, universities, ministries);
 - professional groups in terms of local, national and international focus and type of expertise (practitioners, researchers and policymakers);
 - and languages.

2.2 Study questions

1. What are the 'meta-characteristics' of dgroups?
2. What are the characteristics of a sample of individual dgroups?
3. What are the characteristics of the interactions which take place through dgroups?
4. What is the role of social capital to the functioning of individual dgroups?
5. How many dgroups are 'successful' and what factors contribute to this success?
6. What are the incentives which motivate users and moderators to take part in Dgroups?

2.3 What the study does not cover, and why

As this is a research study, based on research questions and hypotheses, it is not looking at user satisfaction. Neither does it look at the technical aspects of the Dgroup platform. There has been a conscious effort not to consider technical aspects of the platform for two reasons. Firstly, the technical platform has not changed dramatically since the 2004 study, mentioned in more detail

below, so that its findings related to the technical platform are in many ways still valid. Secondly, the Dgroups Partnership is currently investigating the possibilities of changing the specifications of the technical platform. This means that any findings on the technical platform in this study would soon be overtaken by events and invalidated. In addition to this, the study does not provide an in-depth analysis of the Dgroups Partnership, but rather provides a description to give some background to the context in which dgroups are being formed. Finally, some recommendations for the future development of Dgroups are also provided. However, this is not the primary purpose of the study. Instead, it tries to analyse the users and uses of dgroups today.

2.4 Key concepts

There are a number of key concepts, used throughout this report, which need some definition.

Active dgroups are defined as those groups which have received at least one message in the past four week period. This follows the definition used by Lo and Salas (2004).

Creators are generally members of staff of the partners or members of the Dgroups Partnership. They are able to start up new dgroups using a standard page which they are able to access through 'my dgroups' on the Dgroups home page [www.dgroups.org].

Administrators are a class of dgroup users with rights relating to the technical platform. This allows them to make amendments to content, including introductions and the set-up of the dgroup; to add and delete users; and to add resources and introduce different categories of resources. There may be more than one administrator on one dgroup, but every dgroup has at least one administrator.

Architects comprise those individuals who have either championed Dgroups or who have been responsible for developing the Dgroups vision. They are generally current (or past) employees of member and partner organizations

Lurkers are defined as the users of dgroups who have never posted a message in a particular group. A lurker in one group may be an active member of another group.

Moderators are the users who are generally responsible for interaction within a dgroup. They are also referred to as facilitators. There may be more than one moderator in a dgroup. Moderators may also be administrators, but this is by no means always the case. Not all groups have a moderator. In particular, groups being used to support a work team often operate without a moderator.

The **platform** comprises the software/operating system and hardware on which Dgroups is being maintained.

Resources are the links (URLs) and files (documents, photographs etc.) which are posted within a dgroup.

Users are the sum of all users of a dgroup, including moderators and administrators. They may comprise active members who have posted one or more messages or resources (links, documents), or they may be passive users or lurkers (see above).

3 The context

3.1 Knowledge networks in development

Development organizations are becoming more and more conscious of the use of knowledge within their organizations and also how it is to be shared with the outside world: other organizations and individuals (*Cummings, Heeks and Huysman 2006*). This focus on knowledge is certainly not out of place in the development sector, because development initiatives themselves are comprised of knowledge-based practices. Only with increased understanding of development, in all its various dimensions, can these practices be improved. Key to this process is learning, particularly social learning in groups and organizational learning. Social (or collective) learning, fundamental to how development practices are improved, takes place in informal and formal networks. Since the explosive growth in the use of ICTs, much of this networking happens through the medium of online networks. Thus, development networks are increasingly going online.

The role of knowledge networks within development is receiving increasing attention. Such development networks go by a variety of different names: 'communities of ideas' (*Engel 1997*), 'communities of practice' (*Wenger 1997*), 'formal knowledge networks' and 'virtual teams' (*Willard 2001*), 'knowledge networks' (*Box and van der Zwet 1990*), 'thematic networks' (*IICD website, July 2007*), 'virtual knowledge communities' (*Hardon 2005*), 'international networks for knowledge sharing' (*Egger 2004*) and 'thematic groups' (*World Bank website, July 2007*). They are widespread within and between development organizations. The variety of different names for what are effectively similar entities is illustrative of substantial creativity. Organizations and groups of development professionals are taking advantage of the opportunities offered by the new technology to initiate a vast range of knowledge networks. Such networks have been used to upgrade the quality of the activities, outputs and impact of development organizations, to facilitate a collective learning process, and to contribute to a 'shifting up' of development activities to an international audience (*Engel 1997*). A substantial number of development organizations positive exploit the potential of these networks but, because they are relatively new phenomenon, very little is known about how they work.

3.2 The Dgroups Partnership

In 2002, four development organizations, namely Bellanet [www.bellanet.org], the International Institute for Communication and Development (IICD) [www.iicd.org], OneWorld [www.oneworld.org] and the Joint UN Programme on HIV/AIDS (UNAIDS) [www.unaids.org], were looking for an online communication tool that would suit their needs for target groups in the developing world, as well as other development practitioners worldwide. As none of the existing knowledge-sharing platforms were considered suitable, these organizations decided to join forces and build their own technical platform, based on an existing Bellanet platform, which they called Dgroups, a diminutive of the full name, 'Development through dialogue' (*Akinsamni et al 2007*). To do this, they created the Dgroups Partnership, which is financially supported and managed by its members, who are committed to supporting Dgroups as a global public good (*Dgroups website, July 2007*). The following text from the Dgroups homepage in June 2002 outlined the vision behind the creation of the Partnership:

Welcome to Dgroups, the starting point for fostering groups and communities in international development. We are a partnership which caters to both individuals and organisations by offering tools and services that bring people together. Whether you are trying to support a team, a group, a network, a partnership or a community, we hope to provide you with the capacity to do this in an environment which is simple, non-commercial, respectful of privacy, and targeted at low bandwidth users in the South. (Dgroups website June 2002, accessed through Wayback Machine, July 2007)

The Dgroups Partnership is an institutional partnership of the sort that has 'developed exponentially over the last decade and they are now the new buzzword in the international donor and development community' (Michelson 2003). Indeed, Michelson identifies four factors which are responsible for the growth in the number of development partnerships in agricultural development, which are probably also responsible for the trend within development generally:

1. A broadened development agenda;
2. The emergence of new actors;
3. New technologies, particularly information and communication technologies (ICTs);
4. Increased donor support of networks as a means to channel their aid and achieve greater impact.

In the case of the Dgroups Partnership, 1, 3 and 4 are particularly apposite.

Why: purpose and motivating factors

The main purpose of starting Dgroups was that the founder partners (Bellanet, IICD, OneWorld, and UNAIDS) wanted to create a platform for knowledge networks so that they would be in the position to start up dgroups to support their work.

The idea behind this was that pooling resources to start this platform was cost-effective, since the organizations would not have to start up their own individual platforms. Specifications included:

- Suitable for low bandwidth users in the South
- Free of advertising
- Protection of users' privacy
- Easy to use

In 2002, many of the participating organizations had been experimenting with other platforms, but they explicitly wanted to avoid technically building and hosting their own platform and wanted to concentrate their efforts on collaboration and cooperation on a reliable, common platform (*personal communication, Peter Ballantyne, July 2007*).

Who: profile of the partner organizations

The number of organizations in the Partnership, both partners and members³ has expanded dramatically since 2002. The current Partnership includes

³ Partners and members may both create unlimited number of dgroups, but the membership fee is higher for partners than for members. Partners pay a fee of CAN\$ 25,000/3 year period while members pay CAN\$10,000 /3 year. The main difference is that partners have access to 3 personalized 'skins' (interfaces) while members only have access to one. This is currently under revision.

as partners:

- Bellanet
[www.bellanet.org]
- British Department for International Development (DFID)
[www.dfid.gov.uk]
- Hivos
[www.hivos.nl]
- Interchurch Organization for Development Cooperation (ICCO)
[www.icco.nl]
- Institute for Connectivity and the Americas (ICA)
[www.icamericas.org]
- IICD
[www.iicd.org]
- UNAIDS
[www.unaids.org]
- OneWorld
[www.oneworld.org]
- World Bank
[www.worldbank.org]

as members:

- Consultative Group on International Agricultural Research (CGIAR)
[www.cgiar.org]
- Canadian International Development Agency (CIDA)
[www.acdi-cida.gc.ca]
- Technical Centre for Agricultural and Rural Cooperation
[www.cta.int]
- Danish International Development Agency (Danida)
[www.um.dk/en]
- Food and Agriculture Organization of the United Nations (FAO)
[www.fao.org]
- International Development Research Centre, Canada (IDRC)
[www.idrc.ca]
- International Network for the Availability of Scientific Publications (INASP)
[www.inasp.info]
- Royal Tropical Institute (KIT)
[www.kit.nl]
- SNV
[www.snvworld.org]
- Swedish International Development Cooperation Agency (Sida)
[www.sida.se]
- Swiss Agency for Development and Cooperation (SDC)
[www.deza.admin.ch/en/Home]

These organizations comprise a diverse group, including international or intergovernmental organizations (World Bank, UNAIDS, FAO, CTA), government agencies (Danida, DFID, IDRC, Sida, SDC), national and international NGOs (ICCO, Hivos, OneWorld, KIT, SNV), and ICT- and knowledge focused institutes/projects (IICD, Bellanet).

How: ownership and management, governance, formality

All of the current partner and member organizations are based in the North. Although a number of organizations start dgroups for their Southern partners, and all of them use it as a tool to remain in contact and to collaborate with Southern partners, the control of the Partnership is very much in Northern hands. There have been efforts to allow Southern organizations to join the Partnership, often with a construction based on services in kind, but these have

never been realized, probably due to decision-making difficulties intrinsic in the previous governance system. However, although the Partnership is very Northern, the dgroups themselves are self-regulating and tend to have a diverse and informal power structure. These individual dgroups, like all knowledge management tools, are also subject to power issues:

Knowledge management intrinsically harbours power issues: which knowledge is deemed important, who manages the knowledge, who 'owns' it, who determines whether, when and how it is applied – all these issues affect organizational dynamics and express divergent interests, political struggles and power relations, driven by competing rationalities underpinning their actions. This is even more pertinent in the development sector because of dependency relationship between donors and recipients. On the one hand, aid recipients have to provide accountability to their donors, and often depend on the approval by donors to ensure continuity. On the other hand, development aid generally encompasses a transfer of knowledge, funds or sustenance, reflecting a fundamental power dynamic of resources passing from the provider (donor) to the receiver (aid recipient). (Ferguson and Cummings, in press)

In terms of formal organization, the Dgroups Partnership is a co-funded project of Bellanet/IDRC, financed by the partners and members. The technical support for dgroups – and much of the day-to-day management – has been led by Bellanet. Indeed, the firm commitment from IDRC and Bellanet over the years has ensured the continued survival of Dgroups to date. In 2007, Dgroups began a transition away from dependence on Bellanet/IDRC (*personal communication, Peter Ballantyne, July 2007*).

Governance structures for Dgroups have been rather unwieldy in the past, making decision-making difficult between the annual meetings of the Partnership. However, the recent appointments of both an Executive Committee and a Coordinator appear to be correcting this shortfall. New governance arrangements introduced from January 2007 appear to be much better able to deal with the challenges facing the Partnership.

When: Life-cycle

The Dgroups Partnership was created in 2002 and has now expanded to 19 organizations, and many additional organizations are now considering membership (*personal communication, Peter Ballantyne, July 2007*). However, there is a general recognition within the Partnership that a renewed technical platform is required, meaning that Dgroups is now entering a new phase. The possibilities of this new technical platform are currently being investigated.

4 Data collection

4.1 Literature

Of the literature that refers to Dgroups, an attempt was made to consult both formal and informal documents. The most important of these was the 'Characterization of Dgroups' undertaken by Lo and Salas in 2004. This study made a number of findings which are relevant to this research study for a number of reasons. Firstly, it is the only in-depth study of Dgroups to date. Secondly, it focuses on the dgroups in Latin America and the Caribbean, so that it provides an in-depth analysis of dgroups in this one region. Thirdly, it makes a number of findings related to the technical platform which are still relevant today, since the technical platform has seen no fundamental changes since the characterization took place.

Full details of literature cited may be found in Appendix 3.

4.2 Web statistics

There are three sources of the web statistics used for this study.

Web statistics

Web statistics were provided by Bellanet in January 2007. The categories selected were in most cases the same as the Characterization by Lo and Salas cited above in order to make comparison possible. In addition to this, web searching was done on the Dgroups platform (May and June 2007) to identify the thematic categories, languages and continental focus of dgroups. The objective of this was to compare this with the data collected from other sources. These two sources are distinguished by being designated respectively: web statistics and search engine statistics.

Search engine statistics

The search engine on the Dgroups platform was also used to generate statistics, particularly related to the thematic coverage and language interfaces of individual dgroups. These statistics under-reported both totals: the total of dgroups found using the search engine is 1732, while on the same day the total of dgroups listed on the front page is 2271; and totals identified by categories when compared to the search engine total of 1732. This discrepancy is because some administrators request – it is an option when starting up a dgroup – that the group should not appear in the dgroups listing and therefore does not appear during searching.

Wayback Machine statistics

An alternative source of web statistics was used to chart the growth in the number of dgroups and users over time. Using The Wayback Machine [<http://web.archive.org/web/>], growth in the numbers of dgroups and users was charted twice a year (June and December) from June 2003 onwards. June 2003 was the first time that the Dgroups homepage listed the number of groups and users. The Wayback Machine made it possible to chart the growth of dgroups over regular intervals. Using this tool, statistics were not available for June 2007 so, for the final data point, statistics for mid-July were used. They represent a slight over-estimate for the level that would have been reached by 30 June 2007.

4.3 Interviews

In January and March 2007, interviews were undertaken with a small group of representatives of partner and member organizations. Those interviewed were:

- Elizabeth Clarke, OneWorld
- Andrew Nadeau, FAO
- Julia Chandler, DFID
- Robin van Kippersluis and Arthur van Leeuwen, SNV
- Nynke Kruiderynk, IICD
- Michael Roberts, Bellanet

Between them, these organizations have created the vast majority of dgroups: 71.8% of all dgroups. They are also representative of different types of organizational users. High volume users (Bellanet, IICD, OneWorld), medium volume users (DFID), and low volume users (FAO). In addition to this, the researcher was the representative for Dgroups from KIT (a low volume user) from mid-2005 until June 2007, and has an understanding of how KIT uses Dgroups.

4.4 Focus group meeting

A focus group meeting was undertaken in May 2007 with a group of so-called lurkers. The objective of the focus group meeting, despite the fact that the participants were by no means representative of all dgroups users, was to develop a better understanding of why some users 'lurk' instead of being active members.

4.5 Questionnaire surveys

Two questionnaire surveys were circulated in the first half of 2007. Questionnaire 1 covered a survey of administrators of dgroups. Questionnaire 2 was used for a survey of individual dgroups and was directed at moderators.

Both surveys were administered via SurveyMonkey [www.surveymonkey.com], a platform for administering online questionnaires. For the purposes of this study, a paid subscription to SurveyMonkey was acquired because of the advantages it offers in terms of numbers of survey responses, and also the backup that is available. This backup came into its own when the researcher deleted a questionnaire by accident. Within an hour, SurveyMonkey employees had reinstated the questionnaire concerned.

The text of the questionnaires was based on the research questions and hypotheses. The draft versions were shared with academic supervisors and fellow practitioners who are members of the Dgroups Partnership.

Translations

Both questionnaires were originally translated from English into French and Spanish using Babelfish automatic translation [<http://babelfish.yahoo.com/>]. It became clear fairly quickly that the standard of the automatically translated questionnaires was not sufficient. Looking for native speakers to check the translations, their reactions led to the conclusion that the Babelfish translations could not be corrected and that it was more effective to look for translators to translate the original English questionnaires from scratch once again. Two French speaking Dutch persons were used to translate the French questionnaire. A French language Masters' graduate translated both French questionnaires. The first one was checked by a native French speaker working

at IDRC. The second by a colleague who had lived in Francophone West Africa for some years. The Spanish translations were done by a native Spanish speaking, Latin American student, undertaking a tertiary degree in The Netherlands. The checking of the first translation was done by a native Spanish speaking colleague; and the second was checked by a Dutch colleague who has worked in Latin America and is fluent in Spanish.

One of the challenges faced by the researcher was the fact that it was difficult to be assured of the quality of the questionnaires in languages in which the researcher has a basic reading level (French) or in which the researcher has only knowledge of simple words (Spanish). This required a substantial contribution from native language speakers and colleagues who were skilled in these languages to check and amend the questionnaires. To a certain extent, the uncertainty was unavoidable and was present throughout the study.

Questionnaire 1

This survey was designed to obtain the response of administrators of dgroups. The administrators are a category of users of dgroups who have particular powers over the technical platform. They have responsibilities for a particular dgroup and are able to add new members, and amend the setting of the technical platform for this dgroup. They are also able to decide whether the dgroup is open (publicly accessible) or closed (only accessible to registered users via their password). There may be more than one administrator per dgroup.

The first survey was sent to administrators of dgroups using the same principle that identifies the 'head of household' as the point of survey during a census. Bellanet provided the researcher with 3476 names and e-mail addresses of administrators for the survey. The main language of each administrator was calculated by Bellanet based on the language of his/her dgroups. Where administrators were affiliated to dgroups with different languages, the percentage chances related to the languages were noted. Given that there were only a very small number of Portuguese administrators, and generally Portuguese was not their only language, it was decided to contact these administrators using a Spanish questionnaire.

The list of e-mail addresses to which Questionnaire 1 was sent was not up-to-date. This led to a large number of 'bouncing' e-mails with inactive e-mail addresses. In addition, this also led to a large number of e-mails from people on the address list who did not consider themselves to be administrators. The number of unreachable or declined e-mail addresses amounted to 1,098, 31.6% of the total e-mail addresses provided by Bellanet. The researcher consciously writes 'did not consider themselves to be administrators' because she was aware that some respondents declined to take part in the survey because they were not administrators, in spite of the fact that she knew that they had an administrator role on the technical platform, although they had never used the functionality that this offered them. This indicates that the administrator function is not a totally clear category and is subject to ambiguity. Indeed, of the respondents to questionnaire 1, some 115 (16.5%) said that they were not administrators of any group. In addition to this, some 66 (9.4%) of respondents did not answer the question about the number of dgroups on which they had an administrator role. If these two totals are combined to represent non-administrators, it reaches a total of 181 or 25.9% of respondents.

For this reason, the respondents were re-named 'key users' rather than administrators. Together, they accounted for 1,552 dgroups, approximately

three-quarters of all dgroups at the time. Indeed, the list of e-mail addresses seemed to correspond to key users of dgroups more than to actual administrators.

The enormous amount of e-mail traffic caused by the inactive e-mail addresses – which needed to be removed from the address list – plus the huge amount of traffic of non-administrators who needed polite replies were the source of much stress for the researcher. This was further complicated by the fact that the questionnaire was in three languages, which made the respondent tracking feature of SurveyMonkey less effective. Combined with the fact that the original e-mail addresses included some duplicates and that some people have a multiple number of e-mail addresses, a small group of individuals received a range of automatically generated e-mails and reminders. The strategy was therefore changed when sending out Questionnaire 2, as can be seen below.

Response rates for Questionnaire 1

Response rates reached an average of 29.3% over the survey period in the first half year of 2007 (see Table 1). The totals for the English, French and Spanish surveys were 32.7%, 61.2% and 17.4% respectively.

The response rate for the Spanish survey is much lower than the other response rates. In the researcher's opinion, this relates to the situation in Costa Rica, a key country, at the time. The 2004 Characterization of Dgroups established that:

Of the 71 dgroups in the Latin American category, or in a specific country in the region, the majority rely on participation from Costa Rica or the administrators of the group are located in this country. (Lo and Salas 2004: 13)

At the time of this survey, Costa Rica was going through severe problems which affected its connectivity, which can be seen from this e-mail by a colleague living and working in Costa Rica [Name withheld]:

Finally, I want to share with you a situation that's affecting Costa Rica and also directly my work. Most of Costa Rica's electricity comes from water dams that provide us with clean hydroelectric power. The amount of power this plants can generate depend directly from the amount of rain, and because of Global Warming we've had a very long dry summer.

Also, since a few years back the workers of the National Institute of Electricity and Telecommunications (ICE) have issued warnings that the country needs to invest in creating another water dam because the demand of electricity has risen. However, many people in the government want to make electricity and telecommunications private, so since they want the national enterprises to look bad, they haven't authorized them to invest or take the necessary precautions.

THE RESULT: Costa Rica has a power shortage, and everyday we have power blackouts that last approximately 3-4 hours. This of course also means that I loose connectivity, hence I haven't been answering e-mails or requests as quickly as usual. Please forgive me for any delays this may cause.

Given the high proportion of Costa Rican participants in dgroups shown by the 2004 study, the researcher argues that this is responsible for the low level of response to the Spanish survey.

Questionnaire 2

This survey collected information on named, individual dgroups. Respondents were moderators of dgroups, again based on the principle that identifies the 'head of household' as the point of survey during a census. Moderators are responsible for the interaction of users in a dgroup. They may do this by posting messages which encourage other users to take part and generally have personal ownership of the level of activity in the dgroup, despite the fact that they usually undertake this as a professional activity. They are the individuals who are best able to assess the effectiveness of the dgroup: they know why it was set up, they know the users, and are able to assess the level of interaction within the dgroup. For this greater familiarity with the process of interaction, rather than the role of the technical platform, they were preferred to administrators for answering detailed questions about individual dgroups. However, they are often, but not always, also administrators of the dgroup. As in the case of administrators, there may be more than one moderator per dgroup.

Survey language	N =	Responses		
		Timing	Number	Percentages
English survey	1,707	First call	335	18.9%
		Reminder	224	13.1%
		Total	359	32.7%
French survey	49	First call	24	49%
		Reminder	6	16.7%
		Total	30	61.2%
Spanish survey	622	First call	74	11.9%
		Reminder	34	5.5%
		Total	108	17.4%
Total	2,378		692	29.3%

Table 1: Responses to Questionnaire 1

Given the overlap between administrators and administrators, and to reduce the risk of causing a nuisance to a wider group of users, the second survey was sent to the persons who had responded to the first survey. Very few people declined because they were not also moderators, which indicates that this was a reasonably effective manner of reaching moderators.

With hindsight, however, the researcher now considers, based on personal experience, that the survey of moderators may have meant that the survey missed out on an important category of individual dgroups. These are dgroups without moderators which actively function to support one particular work activity. For example, the dgroup which was used to organize the 2007 annual meeting [www.dgroups.org/groups/KM4Dev2007] of the Knowledge Management for Development (KM4Dev) online community [www.km4dev.org] and the related dgroups which support the editors of the Knowledge Management for Development Journal [www.dgroups.org/groups/km4dj-editors] and its Editorial Board [www.dgroups.org/groups/KM4devjournal] are typical examples of active dgroups without moderators. These three non-moderated dgroups are extremely active, for example the KM4Dev2007 dgroup was listed for some time on the Dgroups homepage as one of the five most active dgroups. Such groups are generally used to directly support work processes and no-one is responsible for the interaction of users. However, all dgroups have one or more administrators who are responsible for the settings (name, members, rules of interaction etc.).

Response rates for Questionnaire 2

The response rates for Questionnaire 2 were higher than for Questionnaire 1, reaching a total of 35.5% of the 547 persons to whom the questionnaire was sent (see Table 2). It is estimated that the response rate is higher for this questionnaire for a number of reasons: it was sent to individuals who had already responded to the first questionnaire; the number of potential respondents was much lower (547 rather than 2,378); and the e-mail addresses had already demonstrated that they were correct. In addition to this, the situation in Costa Rica had improved, leading to a 38.3% total response to the Spanish survey, compared to 17.4% to Questionnaire 1.

Survey language	N =	Responses		
		Timing	Number	Percentages
English survey	452	First call	108	23.9%
		Reminder	49	10.8%
		Total	157	34.7%
French survey	14	First call	5	35.7%
		Reminder	1	7.1%
		Total	6	42.9%
Spanish survey	81	First call	19	23.5%
		Reminder	12	14.8%
		Total	31	38.3%
Total	547		194	35.5%

Table 2: Responses to Questionnaire 2

4.6 Data key

Data collected from different sources has a different key in the figures throughout this report:

- Standard web statistics = sky blue
- Wayback Machine statistics = pale blue
- Search engine statistics = red
- Questionnaire 1 = green
- Questionnaire 2 = yellow

For all data sources, a bright aquamarine is used for the second series in the figures. This has no implications for the data from which it is derived.

5 Data analysis

5.1 'Meta-characteristics' of dgroups

Trends in the number of dgroups and users

The number of dgroups and dgroups' users is increasing at a linear rate as can be seen from the figures (Figures 2-5) below.

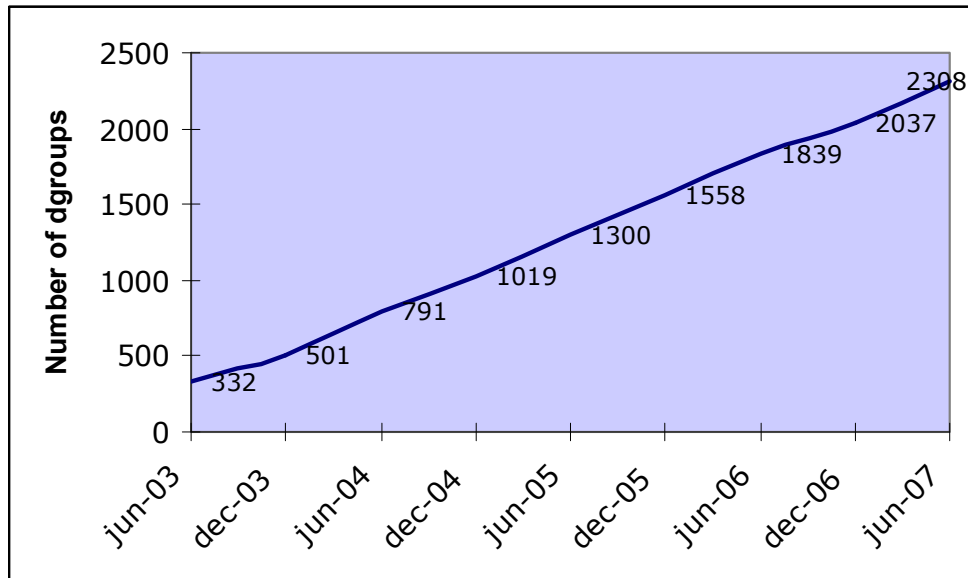


Figure 2: Growth of the number of dgroups

The number of dgroups has risen from 332 in June 2003 to 2308 in mid-July 2007. This represents a linear growth in the number of dgroups. In recent years, the number of dgroups has been rising at approximately 500 per year as can be seen in Figure 3.

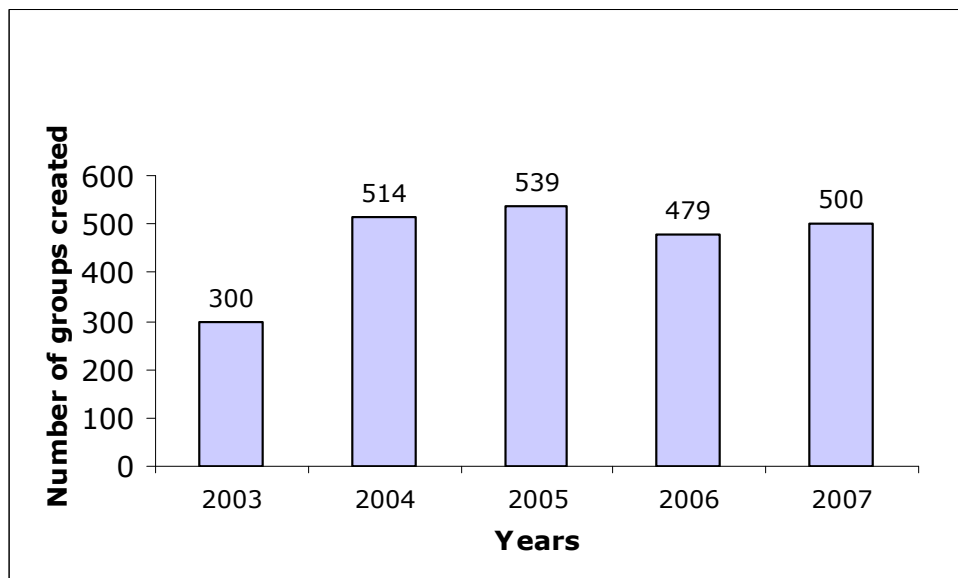


Figure 3: Number of dgroups created per year, 2003-2007

The highest number of new groups was created in 2005 when 539 new dgroups were created (see Figure 3). Although the number of groups that will be

created by the end of 2007 is estimated at approximately 500, this does not seem to indicate a dramatic deceleration of the rate at which dgroups are being created, but rather a steady rate of creation. In addition, the statistics for 2003 only cover the final three-quarters of the year which is when this sort of data became available on the Dgroups homepage, indicating that the level of new dgroups in 2003 could also have been around the 500 mark.

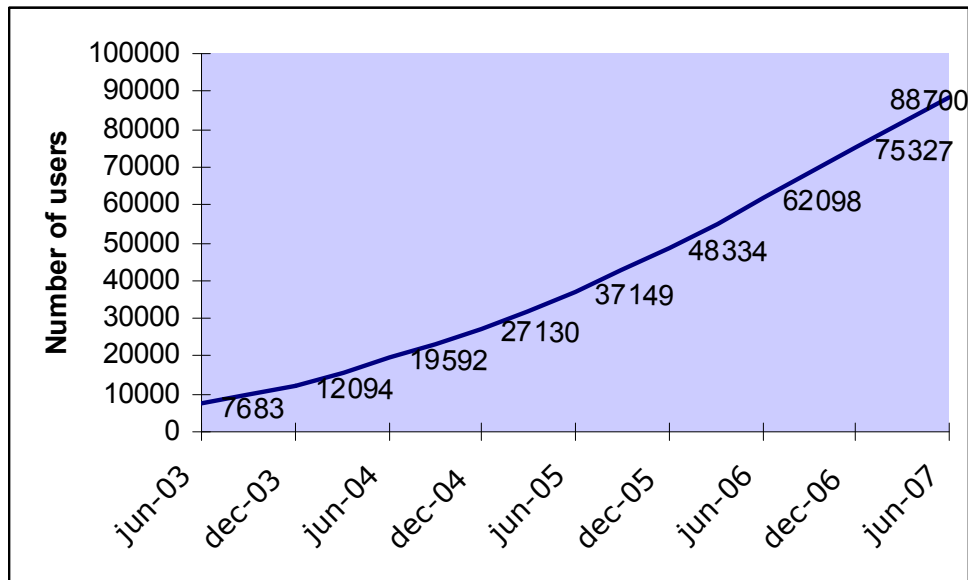


Figure 4: Number of dgroups' users 2003-2007

The number of dgroups users has risen at a non-linear rate (sigmoid or S-curve) from 7,683 in June 2003 users to 88,700 at present (see Figure 4). According to Rogers in his theory of diffusion of innovations (1962), the S-curve often describes how new technology is adopted. In this theory, people are initially slow to begin to use the new technology but, once it is accepted, growth rises, leading to a bell shaped curve as adoption rises at a non-linear, sigmoid rate and then peaks and reduces at a similar rate. The highest number of new users joined Dgroups in 2006, namely 26,993 (see Figure 5). However, the estimate for 2007 comprises 26,746 new members, slightly less than 2006. This may indicate that the level of new users is now stable, or that it may drop after 2007.

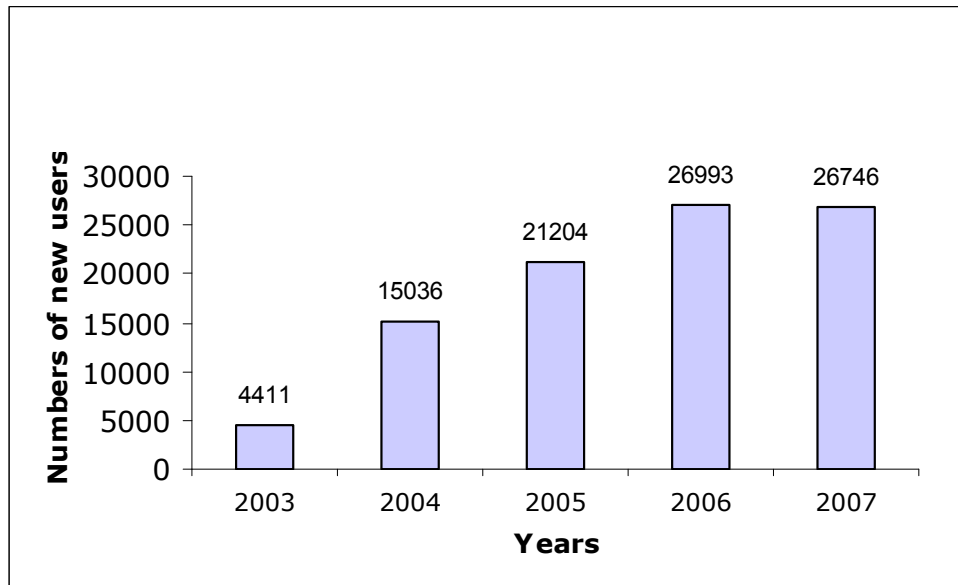


Figure 5: Number of new dgroups users per year, 2003-2007

Thematic coverage of dgroups

Search engine statistics (see Fig. 6 and 7) demonstrate that the most common thematic coverage of dgroups is 'information, knowledge and communication' with 495 dgroups (38%) being focused on this theme. Lo and Salas (2004) concluded that there is a marked centralization in the 'information, knowledge and communication' theme, due to the fact that the partners and or members who have opened the majority of the groups are organizations who work in this area. Although this conclusion is probably still valid, based on these figures, it is possible to argue that 'information, knowledge and communication' is used as a 'catch all' category and, given that online groups are by their very nature an information and knowledge management tool, it would be possible to argue that all dgroups are focused on 'information, knowledge and communication'.

After 'information, knowledge and communication', the next most common category is 'education and training' with 345 dgroups (26.5%). Together, these two categories account for the majority of all dgroups (64.5%). None of the other thematic categories reach more than 5% of all dgroups, giving some idea of the preponderance of these two categories. In the researcher's opinion, both of these two categories may be used as a 'catch all' and may disguise other thematic coverage. This is borne out by the data below which relates the thematic coverage to broader subject categories and to the MDGs.

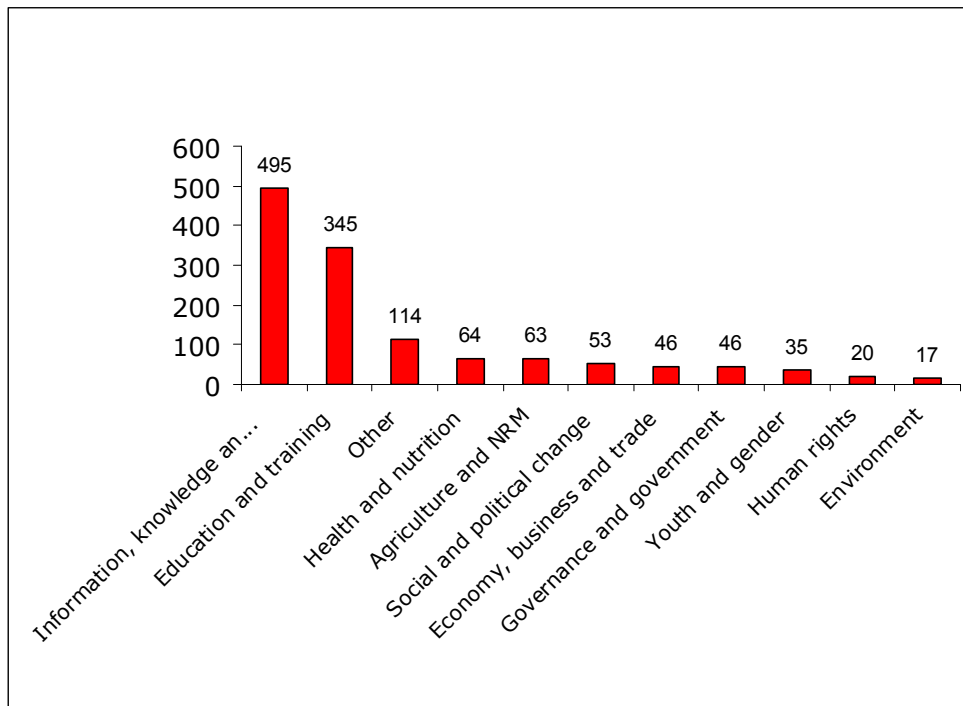


Figure 6: Dgroups per theme (number of groups)

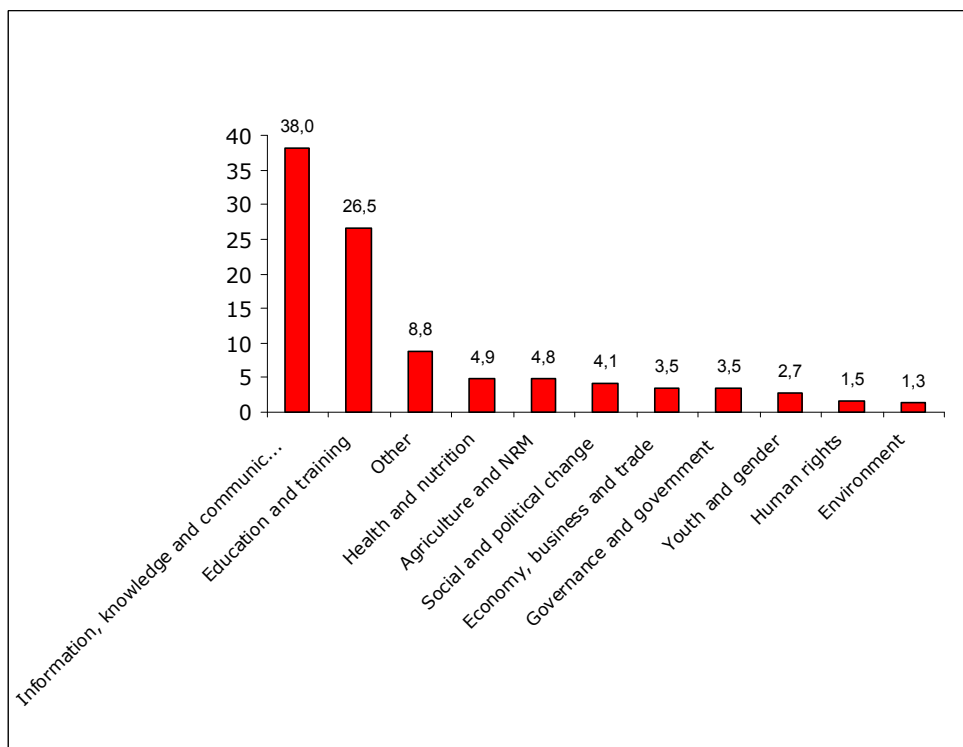


Figure 7: Dgroups per theme (percentages)

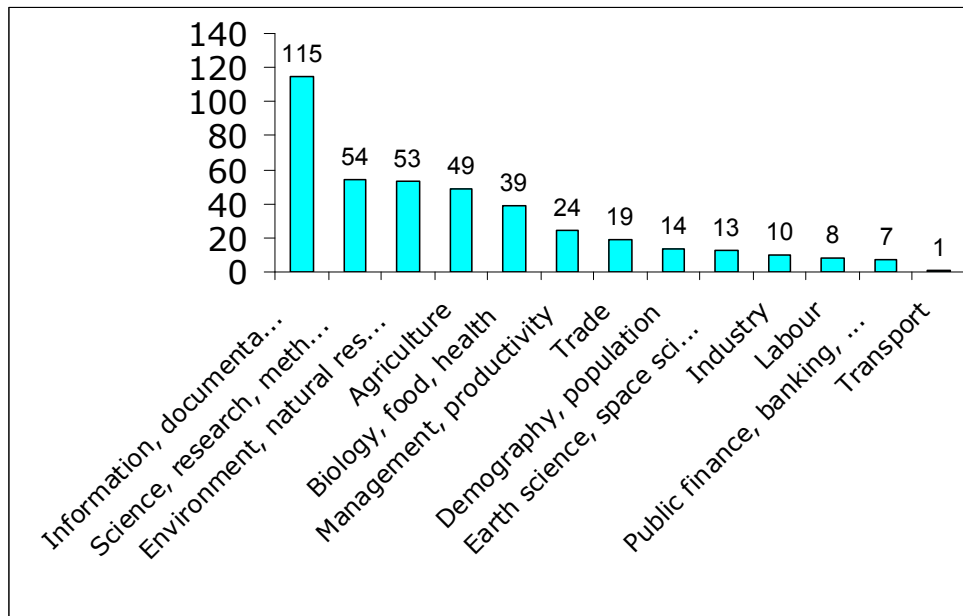


Figure 8: Dgroups per OECD Macrothesaurus subject category (number of groups)

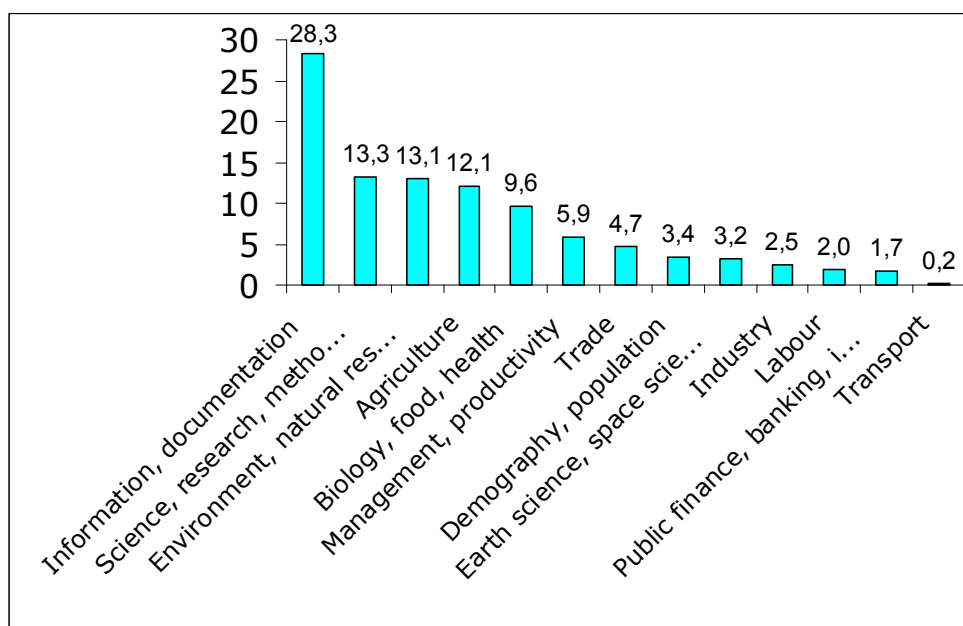


Figure 9: Dgroups per OECD Macrothesaurus subject category (percentages)

To complement data from the search engine statistics, Questionnaire 2 also asked moderators to provide information about the thematic coverage of the dgroups related to the main subject categories of the OECD Macrothesaurus (see Figures 8 and 9). The OECD Macrothesaurus is a commonly used thesaurus to categorise socio-economic development, and it provides an almost all-encompassing range of main categories. Given this broad range of categories, it was felt that the OECD Macrothesaurus terms would provide a more complete coverage of the thematic range and might be a way of identifying thematic shortcomings of the categories offered by Dgroups. Moderators categorised the thematic coverage of individual dgroups within these main categories. Once again, the similar categories of 'information, documentation' (59.3%) and 'education, training' (39.2) were the most common categories, accounting together for 96.4% of all dgroups. However, the respondents were also given the option to select as many categories as

they wished. On average, they selected 3.6 categories per dgroup which gives some impression of the thematic complexity and diversity of the dgroups.

To complement both of these sources of information on thematic coverage, respondents to Questionnaire 2 were also asked about the relationship of the thematic coverage of the dgroups to the MDGs (see Figures 9 and 10). The eight MDGs were agreed at the United Nations Millennium Summit in September 2000 and nearly 190 countries have subsequently signed up to them. The Goals range from halving global poverty and hunger to protecting the environment, improving health and sanitation and tackling illiteracy and discrimination against women. The MDGs are the focus of many development efforts and form a useful basis to assess the thematic coverage of dgroups. The most common focus identified was 'Goal 8: Developing a global partnership for development' at 53.6% of dgroups, followed by 'Goal 1: Eradicate extreme hunger and poverty' (45.9%) and 'Goal 3: Promote gender equality and empowerment'. Both 'Goal 8: Combat HIV/AIDS, malaria and other diseases' and 'Goal 7: Ensure environmental sustainability' were the focus of more than 30% each of dgroups.

Once again, respondents used a number of MDGs (an average of 2.4) to describe the thematic coverage of their dgroups. This again demonstrates the broad thematic coverage of individual dgroups.

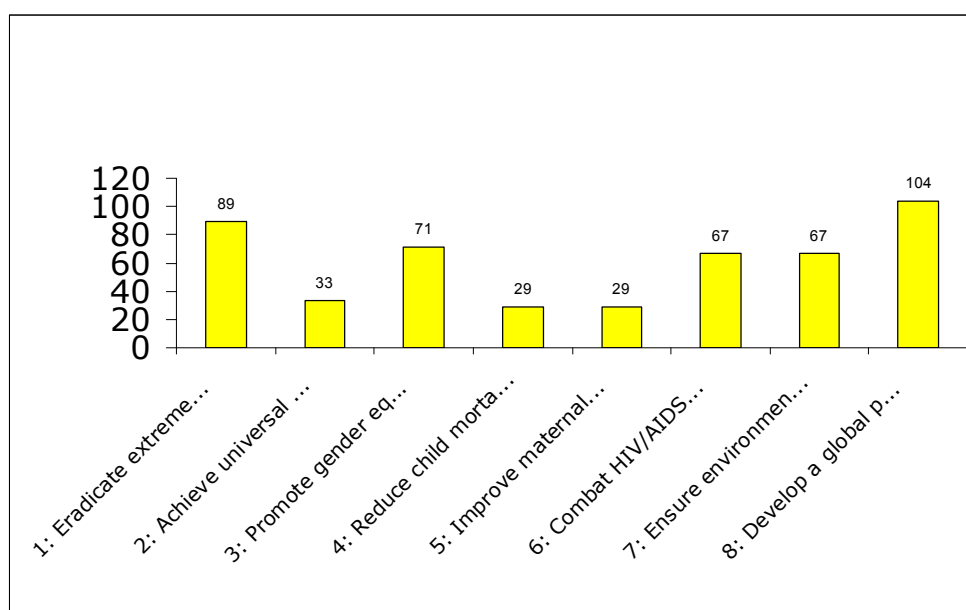


Figure 10: Dgroups focusing on the MDGs (number of groups)

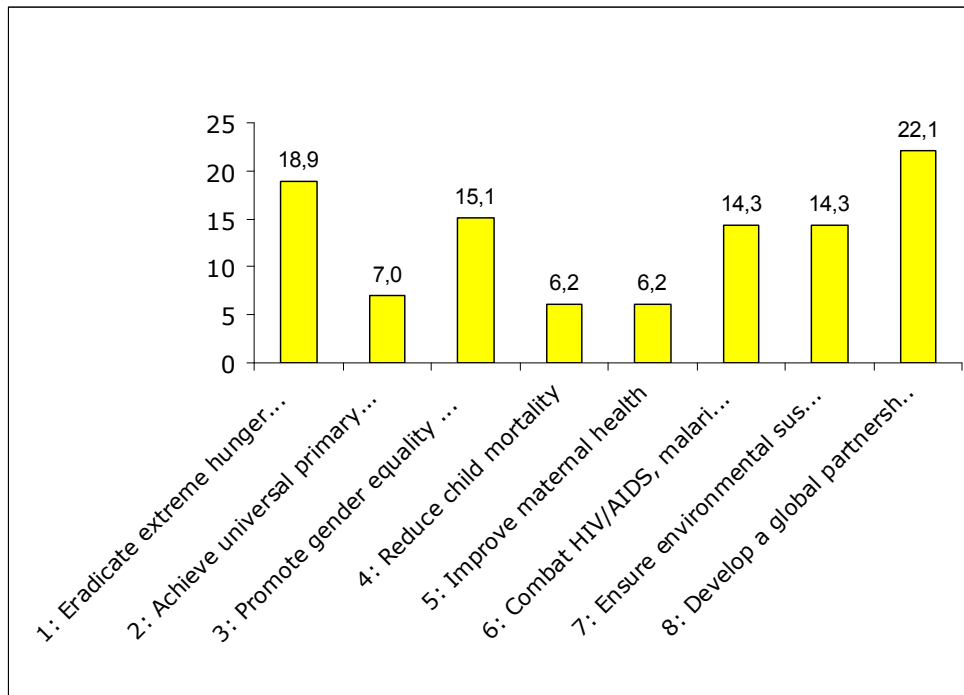


Figure 11: Dgroups focusing on the MDGs (percentages)

In terms of collecting information on the thematic coverage of dgroups, the MDGs, although disguising a number of important categories such as agriculture, economic development and culture, are preferred for development relevance. The current thematic categories used when starting up dgroups certainly disguise the focus on gender. The gender focus will be discussed in more detail below.

5.2 User population

Sex

Data from Questionnaire 2 indicates that the key user population seems to be equally distributed between men and women. However, analysis of the responses to the first call for the questionnaires and to the reminders indicates that women are more cooperative in filling out questionnaires, and men were generally slower in responding than women. This could indicate that women are slightly over represented because, from the literature, women appear to be more likely to return questionnaire surveys. For example, Sax et al (2003) establish that:

regardless of mode of contact, women displayed higher rates of response than did men, a finding consistent with recent research on gender differences in response to paper and web surveys.

Sax et al found that the gender gap in response rates is narrower in surveys sent by e-mail than paper administration, suggesting that online survey administration yields a better gender balance among respondents than paper survey administration. However, evidence from other surveys is not clear: sometimes web surveys yield a greater gender bias and sometimes less. That being said, in Sax et al's survey, the response rate for women was 33.7%, compared to 28.5% for men. If this is the case for this survey, indicated by the differences in the responses to the first call and the second call, it is possible that there is a slight gender bias with women slightly over-represented, and men slightly under-represented.

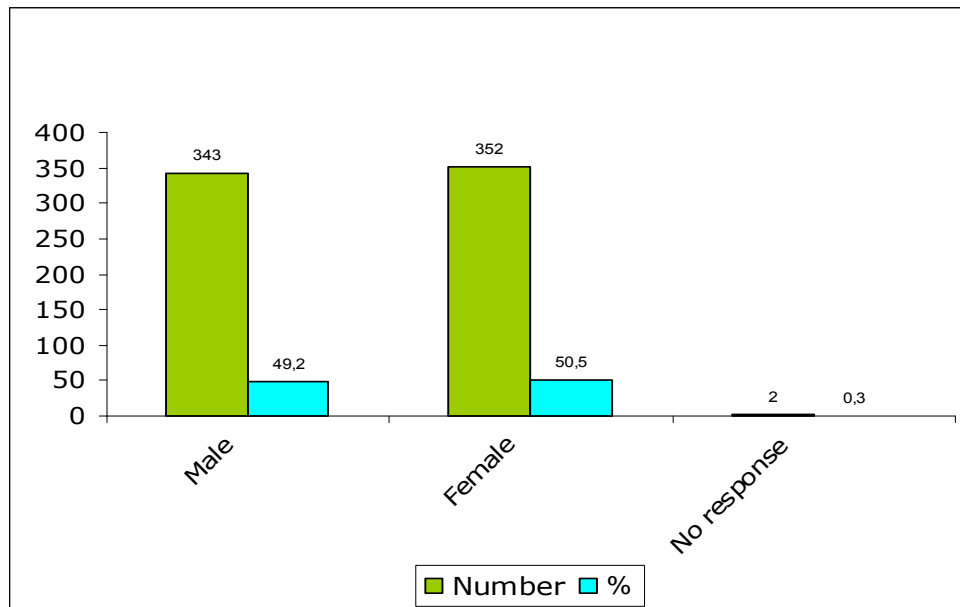


Figure 12: Sex of dgroups' key users

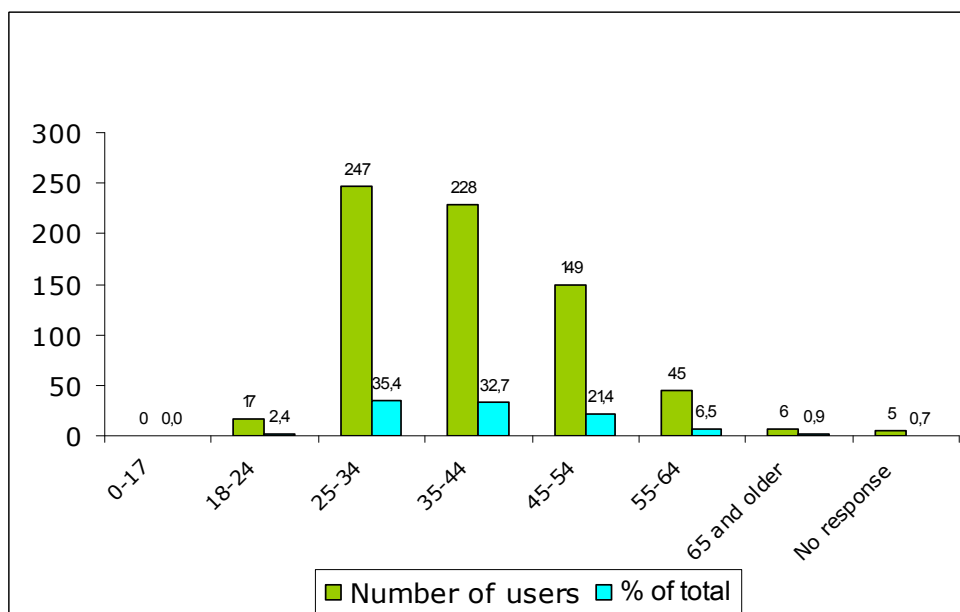


Figure 13: Age of dgroups' key users

Age

The majority of dgroups' key users are between 25-44 years of age (68.1%) as can be seen in Figure 13. After analysis of this data, a scan of the literature was undertaken to see if age is an important factor in the response rates to web surveys, which might indicate a bias in terms of age distribution. There did not seem to be any clear evidence for this. It is also not possible to compare this age distribution to the age profile of the development professional population: this profession population is so dispersed that it is not possible to establish age profiles for comparison.

Education

It is very clear from Figure 14 that dgroups' key users in this sample are highly educated with 74.9% having undertaken tertiary education at university and college, and 20.8% having a Ph.D.

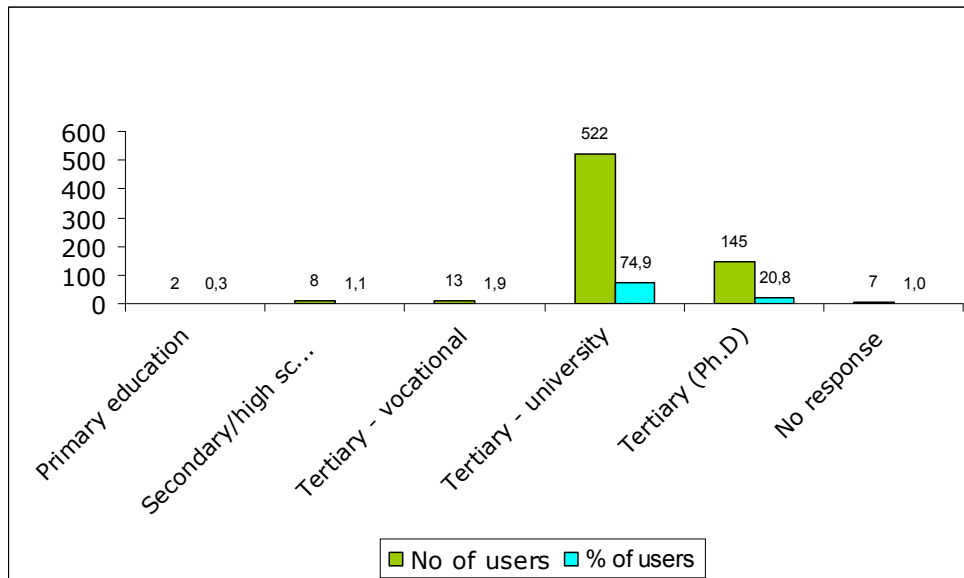


Figure 14: Educational attainment of dgroups' users

5.3 Use of dgroups by partners and members of the Dgroups Partnership

Based on the web statistics provided by Bellanet in January 2007, there is arguably a strict division between high volume users of dgroups (Bellanet, IICD and OneWorld), and all other members. The three high volume users together account for 65% of all dgroups in the sense that they have created these dgroups, although the dgroups are not all for their own use. This high level of use is symptomatic of the fact that not only are the dgroups integrated into their organizational strategy, but also that all three have embraced knowledge management approaches. They are three of the founder members of Dgroups who have been using dgroups since 2002.

In the second category of medium volume users (150-50 dgroups per organization) are the World Bank, DFID, Hivos, the CGIAR and ICA. Overall, this category accounts for 21.9% of all dgroups. All of these organizations are also founder partners.

In the third category of members are INASP, SNV, CTA, ICCO, FAO and KIT. These are all relatively new members of Dgroups and their use of dgroups is growing. For example, KIT had eight dgroups in January 2007 when this data was received but, six months later this number had risen by 350%.

Finally, there is a group of non-members who also have dgroups. These comprise 96 dgroups or 4.7% of the total.

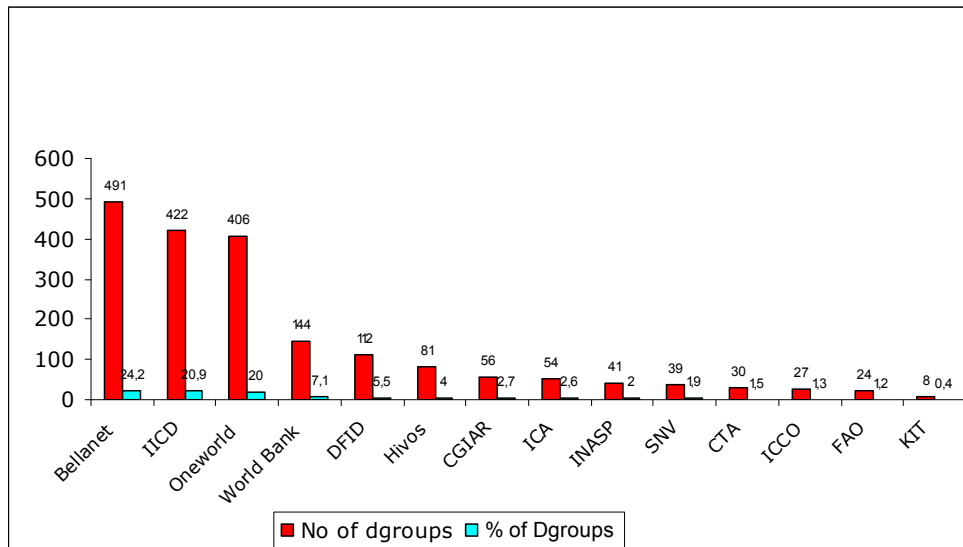


Figure 15: Organizational use of dgroups by member and partner organizations

5.4 Characteristics of a sample of individual dgroups

Number of users per dgroup

Data from Questionnaire 2 which focused on individual dgroups indicated that the most common size of dgroups was 21-40 users (24.2% of all dgroups). Dgroups with 11-70 members account for more than half of all groups (52.5%), although there is a broad distribution ranging from less than ten to more than 201 users. Interestingly, dgroups with more than 201 users are also reasonably common, accounting for 12.4% of all dgroups (see Figure 16).

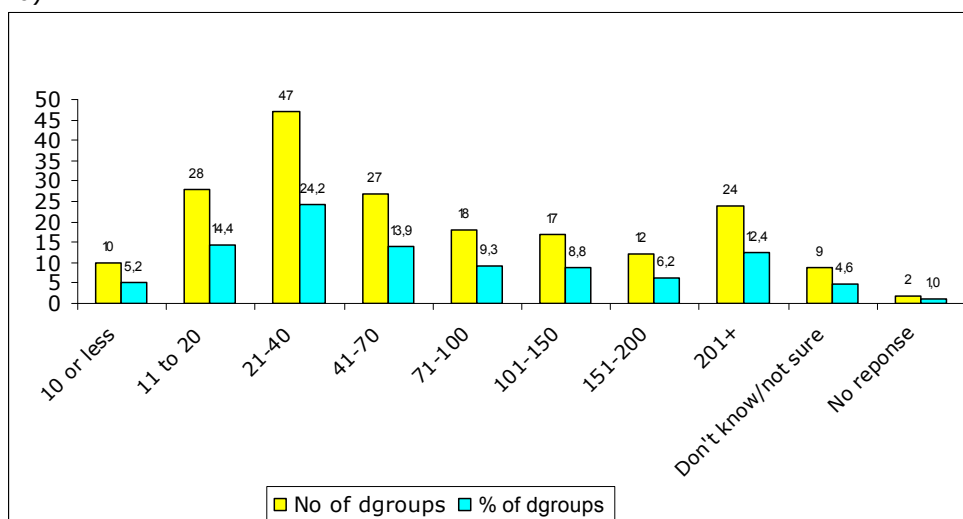


Figure 16: Number of users per dgroup

Year in which dgroups were started

Data from Questionnaire 2 demonstrate the year in which the individual dgroups were started as identified by the moderators (see Figure 17). From the meta-data presented above, we know that a roughly equal number of dgroups has been started in each of the past five years, namely approximately 500 per annum. This leads to the conclusion that the sample of individual dgroups from the questionnaire survey has a greater proportion of recent dgroups and that the newer dgroups are probably more active.

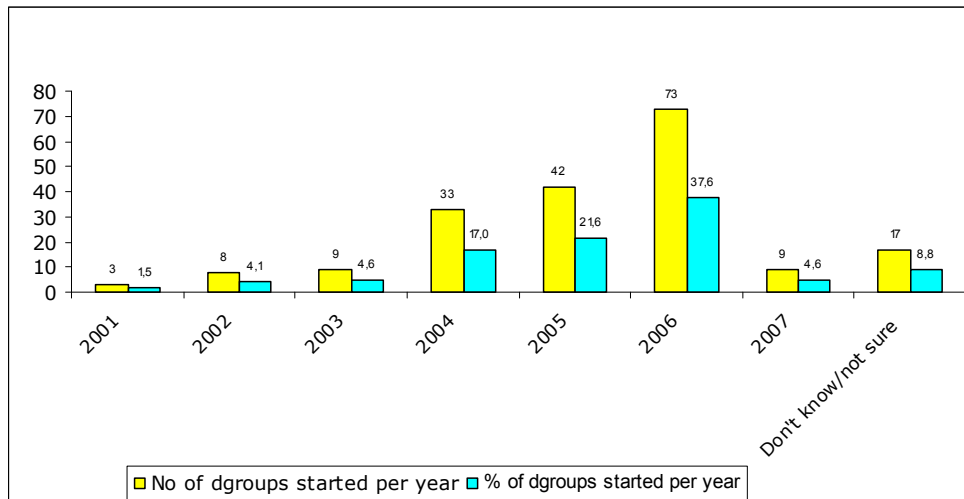


Figure 17: Number of dgroups started per year

Function of dgroups

The most common function of dgroups comprised the 'exchange and generation of knowledge' (84.5%), followed by 'reflection on specific themes' (59.3%) and 'internal communication' (see Figure 18). Respondents were able to fill in more than one category and most did, with an average of 3.0 functions per dgroup.

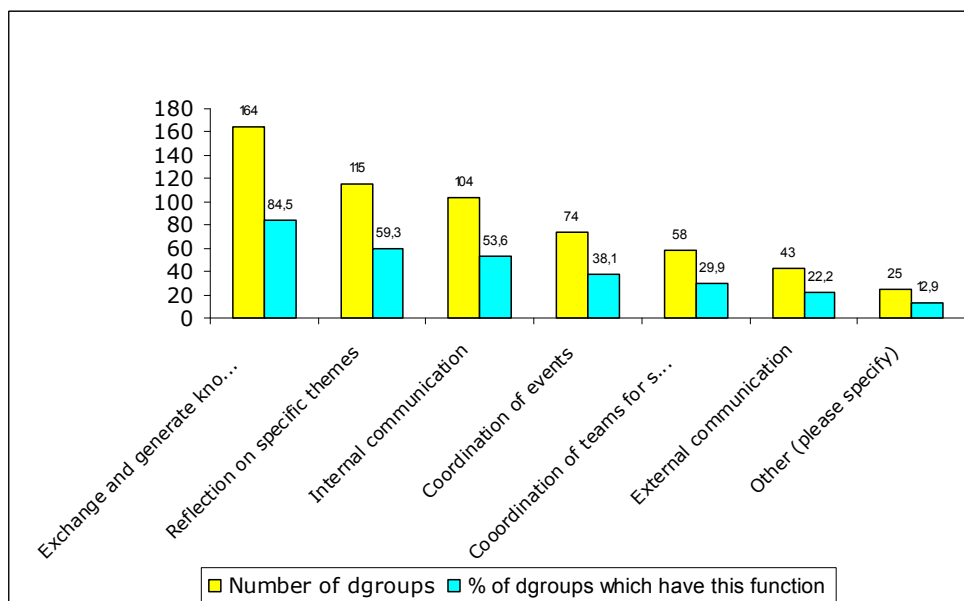


Figure 18: The function of dgroups

5.5 The role of social capital

In November 2006 the researcher published a paper with colleagues which proposed a conceptual framework for analysing the role of social capital within knowledge networks in development (*Cummings et al 2006*). Although at that time the paper argued that social capital was a useful concept to apply to knowledge networks in development, this approach has not been applied here to the functioning of dgroups. The reason for this is that approaches that consider social capital, analysing the role of social capital within individual knowledge networks or communities of practice, are not relevant here where the functioning of more than 2000 knowledge networks takes place within a

black box. The first priority here is meta-analysis, so that more is known of the way dgroups are used across the whole platform.

As a result of these considerations, there was no attempt by the researcher to apply or test the conception of social capital to large numbers of dgroups. In addition, no simple indicator of social capital was included in the questionnaires. With hindsight, the proportion of users who know each other within a dgroup might have been used as an indicator of social capital. However, social capital is a very complex concept, so it may not be realistic to use such a simple indicator to reflect it. However, this question could have been included in Questionnaire 2. The decision was made not to ask moderators this question, because some basic facts were first needed. Anecdotal evidence suggests that strong social capital within a dgroup, namely linking and bonding capital, has a positive impact on the dgroup's functioning.

5.6 Gender

As was demonstrated in Fig. 12, the key users comprise a roughly equal number of men (49.2%) and women (50.5%). Some 71 dgroups in the sample were focused on 'MDG 3: Promote gender equality and empower women' (see Figure 10). This represents 50.7% of dgroups. However, if 'MDG 5: Improve maternal health' is added, representing 29% of dgroups, the level rises to 100 dgroups, more than 50% of the total in the sample.

The International Information Centre and Archives for the Women's Movement (IIAV), based in Amsterdam, makes wide use of dgroups in its work on the role of women and gender, despite not being a partner or member organization, as is demonstrated from quotes from these two articles below:

European Feminist Online Forum [www.dgroups.org/groups/eff]

In October Mama Cash invited a number of women from Eastern Europe and the EU to a meeting in Amsterdam to discuss forward looking strategies for feminism in Europe. One of the proposals on which the group agreed upon, was to develop an open space for European (meaning based in Europe) women for discussing future strategies. The objective of this online space is to advance women's human rights in the European region, considering the possibility of developing a European Feminist Forum, sometime before 2007. The purpose of this group is to share information about possible events, conversations in other spaces, ideas, inspirations relating to the objectives. (WIDE 2004)

The EFF list, moderated by Hivos partner IIAV, is an example of a dynamic and successful dgroup. The objective of this online space is to promote human rights for women in Europe. Participants work towards the possible establishment of a European Feminist Forum. Since this dgroup was launched in October 2004, almost 200 people have joined and are actively exchanging information and experiences from all across the continent. (Hivos 2005)

It is therefore possible to conclude, based on the evidence available:

- Both women and men appear to have an equal leadership role, namely 'administrator', within dgroups;
- More than 50% of all dgroups are focused, in some way, on the issue of gender and women within development.
- In addition to this, a number of gender and women-related institutes make use of dgroups to support their gender-related activities.

It is therefore concluded that dgroups are supporting gender related development.

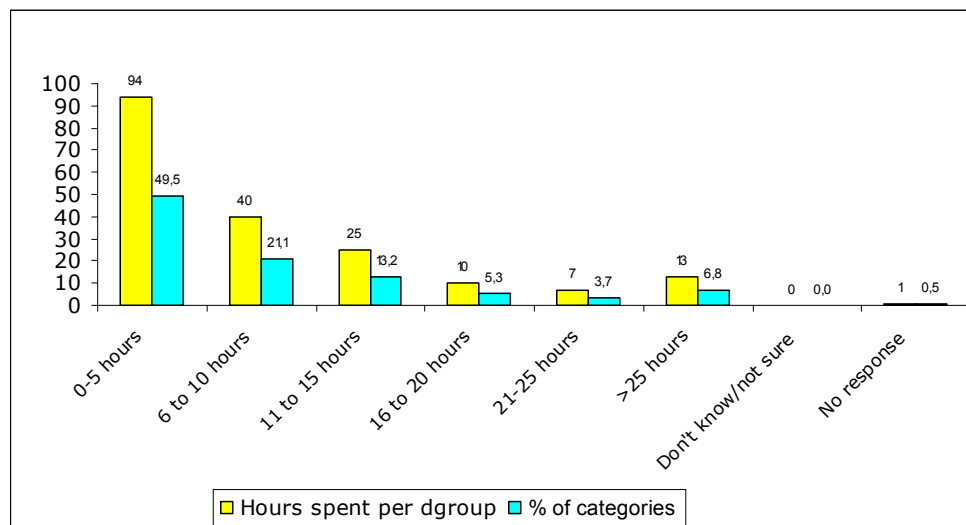


Figure 19: Time investment of moderators in individual dgroups

5.7 Time investment and success

Almost half of the moderators spent less than five hours a month on their moderation/facilitation task for an individual dgroup. According to data collected in Questionnaire 2 (see Figure 20), moderators felt that the majority of individual dgroups (71.0%) could be classified as either 'very successful' or 'quite successful'. The remainder of dgroups were either 'not very successful' (24.2%) or that the concept of 'success' was not applicable (3.2%).

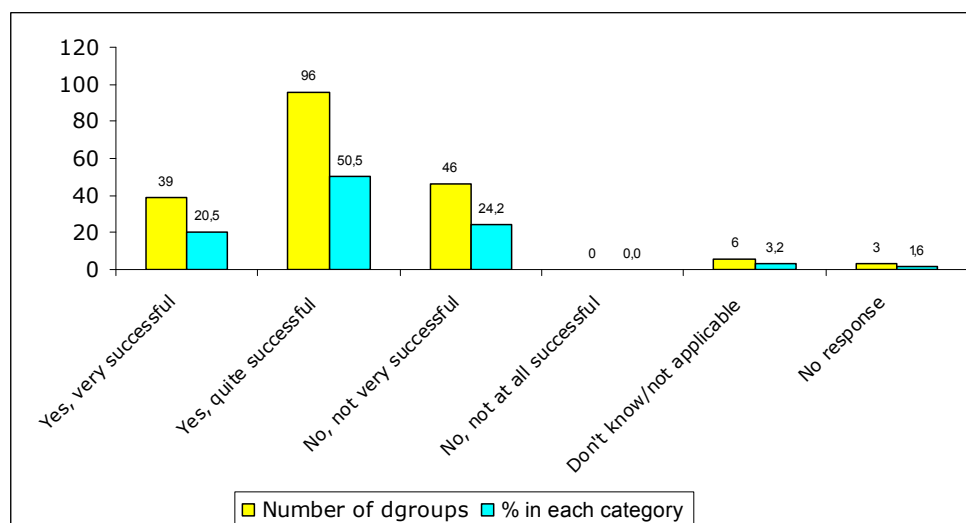


Figure 20: Level of success of dgroups

6 Discussion

6.1 Information and knowledge sharing

The network paradigm is a seductive vision to solve all the above ills in one go: why not connect the North with the South and cross-connect all the involved actors with networks? With such linkages, activities could be coordinated, knowledge could be shared between North and South as well as within and among the countries of the South, best practices could be exchanged, and common standards and procedures developed. Many have succumbed to this alluring vision and countless networks exist in the development sector. (Resource Centre for Development, Skat Foundation 2004)

The central question of this research project is whether dgroups facilitate the sharing of information and knowledge among the actors (individual and institutional) working in the thematic areas of the Millennium Development Goals (MDGs)? First of all, the evidence from the survey of individual dgroups (see Figure 18) demonstrates that 164 of them (84.5%) are being used to exchange and generate knowledge. A further sub-set of 115 dgroups in the sample (59.3%), largely coinciding with the exchange and generation of knowledge but not completely, are being used for reflection on a similar theme which is also very much related, indeed is a component of, knowledge sharing. This is demonstrated in the figure below:

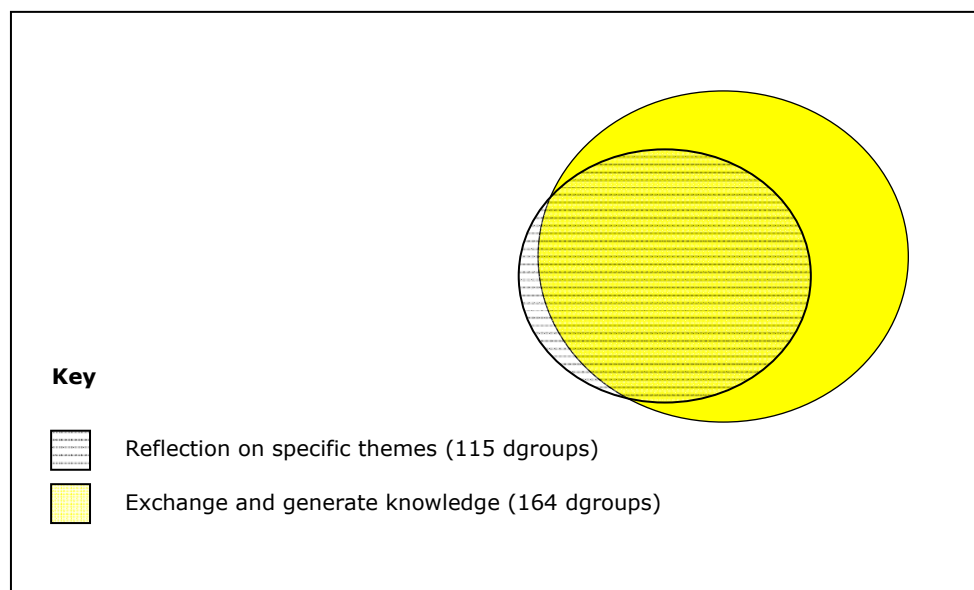


Figure 21: Purpose of the individual dgroups

When the moderators were asked if the dgroups had been successful in promoting knowledge sharing between users, they were of the opinion that some 150 individual dgroups (77.3%) had been successful in stimulating knowledge sharing 'a lot' and 'quite a lot' between users. Only one respondent felt that the dgroup had not been 'at all' successful in stimulating knowledge sharing between users.

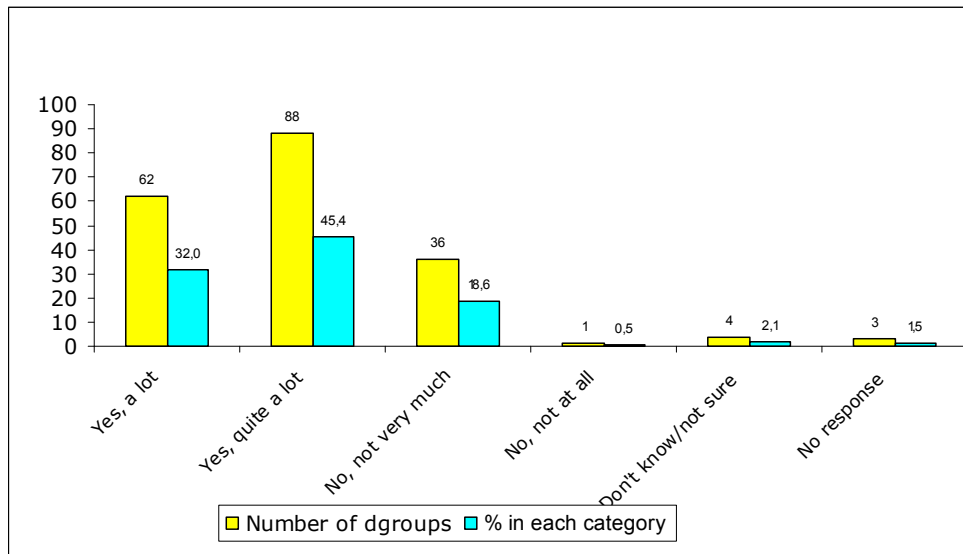


Figure 22: Information and knowledge sharing through dgroups

What does this knowledge sharing consist of? It consists of the knowledge contained in individual messages and threads, but also files shared in the workspace. In 2007, some 12,000 messages were passing through dgroups every month (*Akinsamni et al, in press*). The files shared on the workspace comprise documents in a variety of formats (Word and PDF files) plus pictures and diagrams (in jpg and gif formats) and also sound files in limited numbers. On average, on 15 July 2007, there were 16.5 of such resources per dgroup (the number of resources 37967 divided by the number of dgroups 2,308). Some 1,000 files or links to files are shared each month (*Akinsamni et al, 2007*), with a total of 37,967 having been shared since Dgroups started. There are, however, extremes with some groups having hundreds of resources and some having none.

The information and knowledge sharing taking place within the dgroup may often be the 'tip of the iceberg' of the actual offline and face-to-face sharing. This is, for example, the case for the current activity of the KM4Dev dgroup [www.km4dev.org] and the past interaction on the LEAP IMPACT dgroup [www.dgroups.org/groups/leap/impact], where the dgroup was but one tool for knowledge sharing that was supported by many others.

6.2 Learning processes

This study has also investigated whether dgroups are able to facilitate learning processes (individual, social, and organizational learning) in the diverse institutions working in areas related to the MDGs.

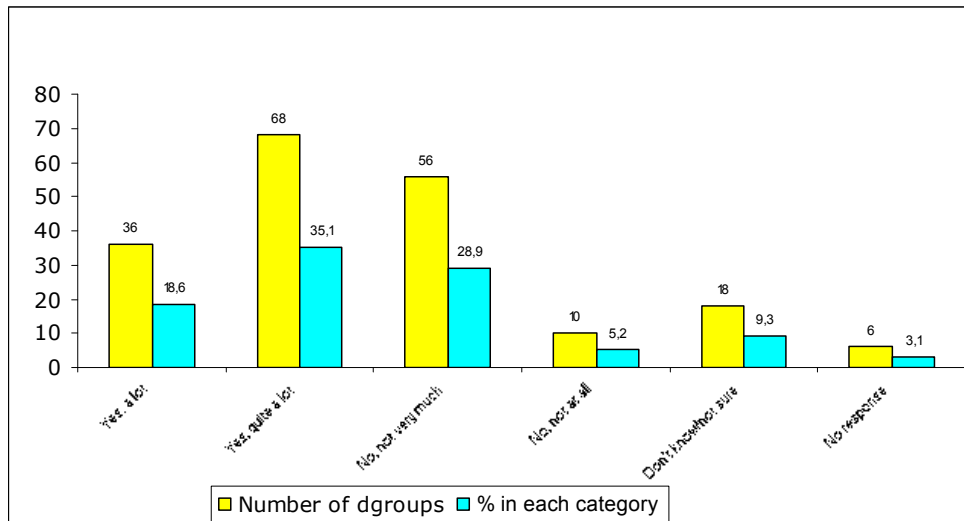


Figure 23: Learning via dgroups

The moderators were of the opinion that the level of learning through dgroups is less than the demonstrable level of information and knowledge sharing. They are of the opinion that 104 dgroups (53.6%) of the total are used for learning. However, the number in the second category 'Yes, quite a lot' (35.1%) is more than in the 'Yes, a lot' (18.6%) category.

Why is the level of learning identified by the moderators as less than information and knowledge sharing? It could be because information and knowledge sharing are easier to identify when they are happening on the dgroup, while learning from others is less easy to identify. Indeed, learning might be more likely to take place outside a group, even when taking place as a result of interactions within the dgroup. Whether this is individual, social or organizational learning is difficult to identify from the data collected. Although it is possible to argue that individual and social learning lead in an incremental way to organizational learning, some commentators argue that learning takes place at an individual level and is a social process, and that organizational learning only takes place through individuals and social groups.

During the interviews with Arthur van Leeuwen of SNV, he outlined how dgroups support organizational learning:

We share knowledge a lot by questioning colleagues using the dgroups, and it makes documents available for whole groups in different countries. SNV is currently developing a pilot involving 'collaboration rooms' allowing collaborative working.

Julia Chandler argues that dgroups could be an important feature of organizational learning within DFID in the future, although they are not at the moment:

Dgroups should be part of organizational learning in the future. At the moment, there are lots of individual projects but these are not coordinated or consistent. Dgroups will not provide all of the answers necessarily but should certainly be in there as an active choice. There is also an initiative of central government to rationalize/tidy up all government web activity and this will filter through.

6.3 Bridging knowledge divides

By addressing knowledge divides, we fight these inequalities. These are big problems, bigger than individuals or organizations can tackle by themselves; therefore it makes sense to join forces in partnership, addressing the challenges in a systematic manner, rather than leaving people to fight for access to knowledge as an individual pursuit. And as such, knowledge management for development tools and approaches can play an important part in bridging these divides. (Cummings et al 2006)

There are a large number of knowledge divides within development. In the context of this study, the following divides are being examined:

North-South

The North-South divide is the socio-economic and political division that exists between the wealthy developed countries, known collectively as 'the North', and the poorer developing countries (least developed countries) of the 'global South'. Although most nations comprising the North are in fact located in the Northern Hemisphere, the divide is not primarily defined by geography. It is defined by power, for example the North is home to four out of five permanent members of the UN Security Council and all members of the G8, and by wealth [Source: www.answer.com]. In knowledge terms, the North-South divide has a number of extra implications:

- Dominance of the North in knowledge creation and distribution; and
- Marginalization of knowledge created in the South.

How could dgroups facilitate contact across the North-South divide? Firstly, if there are users from North and South present on dgroups (crossing North-South divides in terms of users). Secondly, if their geographical focus transcends North-South boundaries (crossing North-South divides in terms of content). Thirdly, if dgroups can cross divides within the continents, linking users and their organizations at local, national, regional and continental level (crossing divides within continents).

The majority of dgroups' users (52.2%) reside in the North, namely in Europe (35.5%) and North America (16.6%) as can be seen in Figure 25. Southern users account for 47% of the total, comprising Africa (17.9%), Latin America and the Caribbean (16.6%), Asia (11.0%), plus the Middle East and Oceania with less than 1% each. Although these continental categories are not totally water-tight (for example, Mexico is part of North America, but is part of the South), they give a general breakdown into North and South. In any event, it is clear that dgroups are not a 'Northern only' phenomena.

Some 41.8% of the dgroups in the sample of individual dgroups (derived from Questionnaire 2) included members across Southern divides, i.e. they included users from more than two Southern continents: Africa, Asia, Latin America and the Caribbean, and Oceania. Some 51% of dgroups from Questionnaire 2 link users from North and South. From these calculations, it is clear that the majority of dgroups in the sample cross North-South divides. In addition to this, the majority (51%) of dgroups has a global focus (see Figure 24), which also indicates that they have the potential to cross North-South divides. Although this is indirect evidence, it does appear to demonstrate that dgroups cross both North-South and South-South divides in a systematic manner. Only

two of the dgroups seem to show South-South cooperation by linking users from Africa and the Middle East. In all other cases where there is direct evidence of South-South cooperation, there are also Northern users in the dgroup.

Figure 26 shows that dgroups cross geographical divides within continents at local, national, regional and continental levels. In the sample of individual dgroups, there were some 36 dgroups in the sample (18.8%) which focused on one country only. Uganda was the focus of the highest numbers of these groups (5), followed by Ecuador, Tanzania and The Netherlands (3 per country). Costa Rica, India, Peru, Canada and Burkina Faso were all the focus of two groups. One example of such a network is the I-Network dgroup [www.dgroups.org/groups/i-network], consistently identified as the most active English-language dgroup on the Dgroups website. This is a Uganda-focused group with predominantly Ugandan members. This is also an important divide, namely between professionals in the same country in the same professional field.

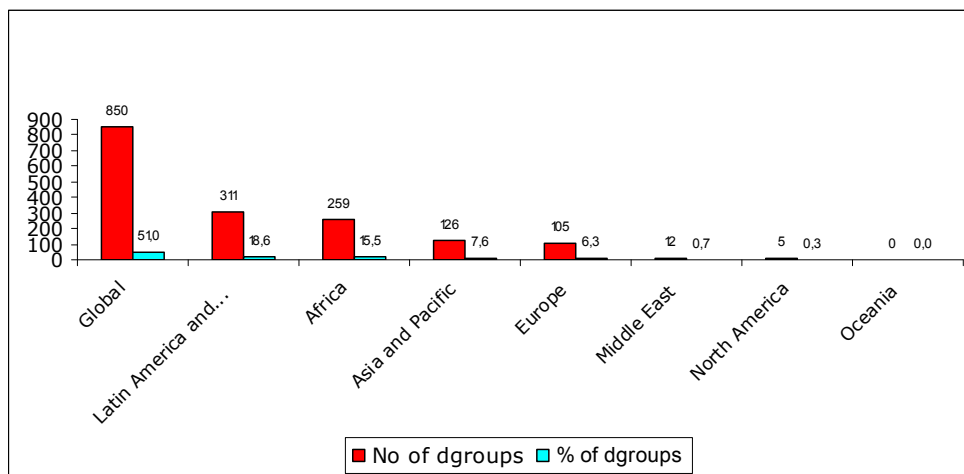


Figure 24: Geographical focus of dgroups

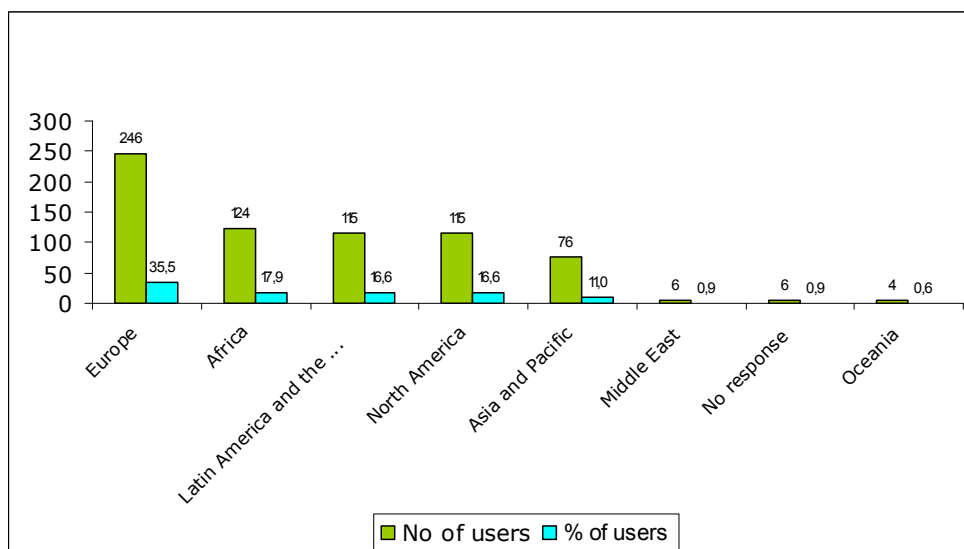


Figure 25: Residence of dgroups' users per continent

The geographical focus of dgroups provides an interesting comparison to the residence of dgroups' users as can be seen in Figures 24 and 25. For example,

51% of the dgroups are 'global' in that they transcend regional and geographical divisions. The highest level of continental focus is that of Latin America (18.6%), followed by Africa (15.5%) and Asia and the Pacific. This demonstrates that although more than half of dgroups' users are located in the North, the focus is very much on either global development or the South. This is, of course, not totally surprising, but it is interesting to see that this global and/or Southern focus extends to 93.4% of dgroups. Only 6.6% of dgroups are fully focused on the North.

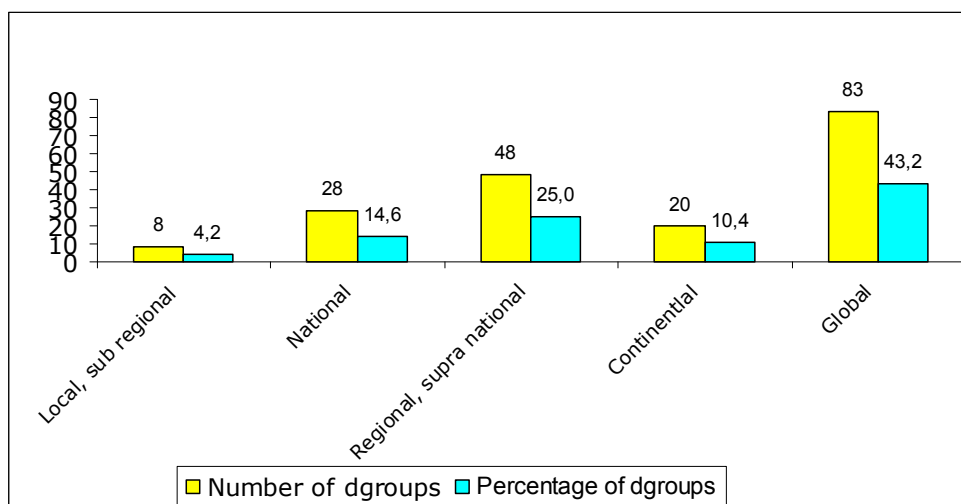


Table 26: Geographical focus of dgroups

Digital divide

The term digital divide refers to the gap between those with regular, effective access to digital and information technology, and those without this access. It encompasses both physical access to technology hardware and, more broadly, skills and resources which allow for its use. Groups often discussed in the context of a digital divide include socio-economic (rich/poor), racial (white/minority), or geographical (urban/rural). The term global digital divide refers to differences in technology access between countries. Essentially, this means the divide between those who have access to digital technology and those who do not. The divide takes in to account wealth, ethnicity and the area of those in the divide. (Wikipedia, July 2007)

The digital divide, one component of the North-South divide mentioned above, stresses the fact the access to ICTs is often restricted in the global South. Dgroups has been designed to be as accessible as possible to those with poor access and restricted connectivity by (1) low bandwidth making it is easier to access online; (2) use of the workspace by e-mail for Southern users who are unable to 'surf the web', but can send and receive e-mails, often via hotmail accounts in Internet cafes rather than having access to the Internet at their work. Only the administrator needs to go online occasionally to use the web interface; (3) being made available to partners at no cost. (4) Another way Dgroups accommodates users working in low-bandwidth settings is by hosting a 'www4mail' server which sends uploaded resources to users as email attachments. The link to access this service is in the body of messages when a newly uploaded resource is announced on the list.

At a meeting of the Dgroups Partnership in January 2007, Andrew Nadeau of the FAO reminded Dgroups partners of the importance of this, arguing that the

FAO's experience was that Dgroups was more accessible to their Southern partners than other online knowledge network platforms. This is born out by responses to Questionnaire 2 in which moderators were of the opinion that 54.5% of dgroups had users who suffered to some extent from restricted access to the Internet. Seen in this light, Dgroups contributes to bridging the digital divide, although it cannot, of course, address fundamental issues of connectivity.

Institutional divides

Development calls for coordinated activities by a wide range of institutions, both large and small. Development initiatives are most successful where they are able to transcend institutional boundaries. As Maxwell and Engel et al (2003) argue:

The discourse today is characterised by a high degree of consensus: a commitment to the MDGs, a consensus strategy on how to reduce poverty, the widespread use of Poverty Reduction Strategies, and a raft of new implementation modalities, including sector wide approaches, budget support, and results-based management.

Within the development sector, there are increasing calls for coherence, coordination and complementarity (Maxwell and Engel 2003), and these are facilitated by dgroups that forge horizontal linkages between peers across organizations.

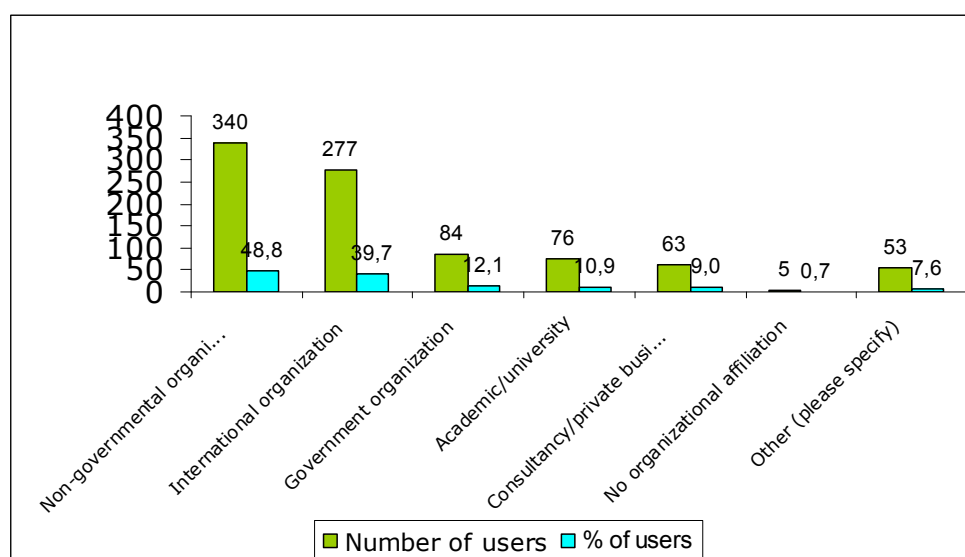


Figure 27 Organizational affiliation of dgroups' users

Although dgroups users primarily work in NGOs (48.8%), other sorts of organizations are also represented: international organizations (39.7%), government organizations (12.1%), universities (10.9%) and consultancies/private business (9.0%). This diversity is also represented by the partners and member organizations, which include a number of international organizations (FAO, CGIAR, World Bank, IDRC, CTA), government organizations (DFID), and NGOs (Hivos, ICCO, KIT). It is therefore possible to argue that Dgroups supports collaborative work transcending organizational boundaries.

Some evidence, however, indicates that dgroups have not yet penetrated the world of academic research (*personal communication, Ton Dietz, January*

2007). No academic organization is, as yet, a member of Dgroups, so there is undoubtedly potential for the dgroups to be introduced to the academic world if they are to be instrumental in bridging the divides between research, practice and policy.

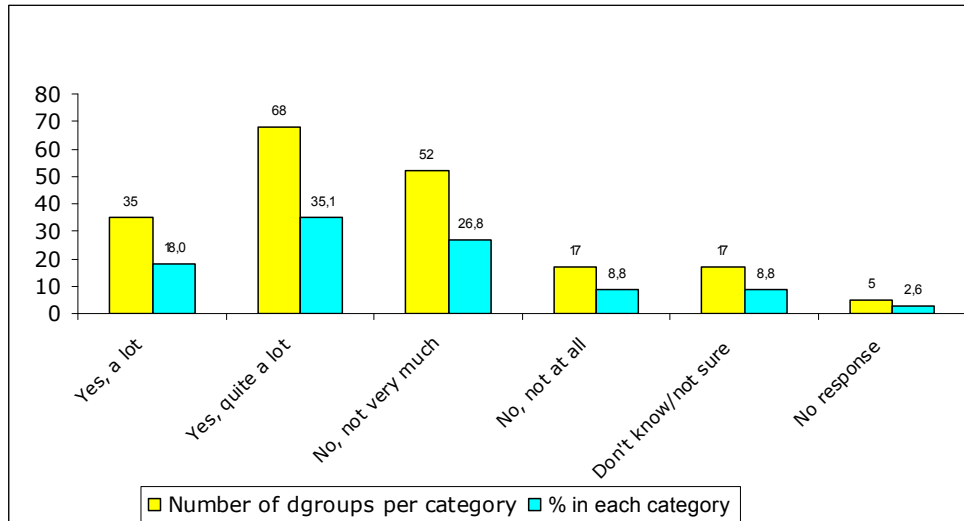


Figure 28 The extent to which collaborative work takes place among users

That collaborative work among users takes place can be seen in Figure 27. In answering Questionnaire 2, moderators were of the opinion that the majority of dgroups (53.1%) were used as a platform to support collaborative work between institutions.

Professional divides

Many development actors, comprising individuals, organizations and networks, are concerned with the knowledge gaps or divides within development. These divides exist between North and South, illustrated by the digital divide, but there are many more. These include the gaps in understanding of development and the perception of the reality between researchers in their 'ivory towers', practitioners working on the ground, and the policymakers in large organizations or in government. (Cummings et al 2006)

Key users of dgroups (Questionnaire 1) come from a wide variety of professional groups. Some 36% are researchers/academics as can be seen in Figure 28. Other well represented categories include: development practitioners (34.1%) and consultants (30.8%). On average, users described their professional experience with 1.76 categories. This indicates that many identified more than one category, again symptomatic of the diversity of dgroups; in this case the diversity of professional experience. With this professional diversity among users, dgroups are able to span professional divides.

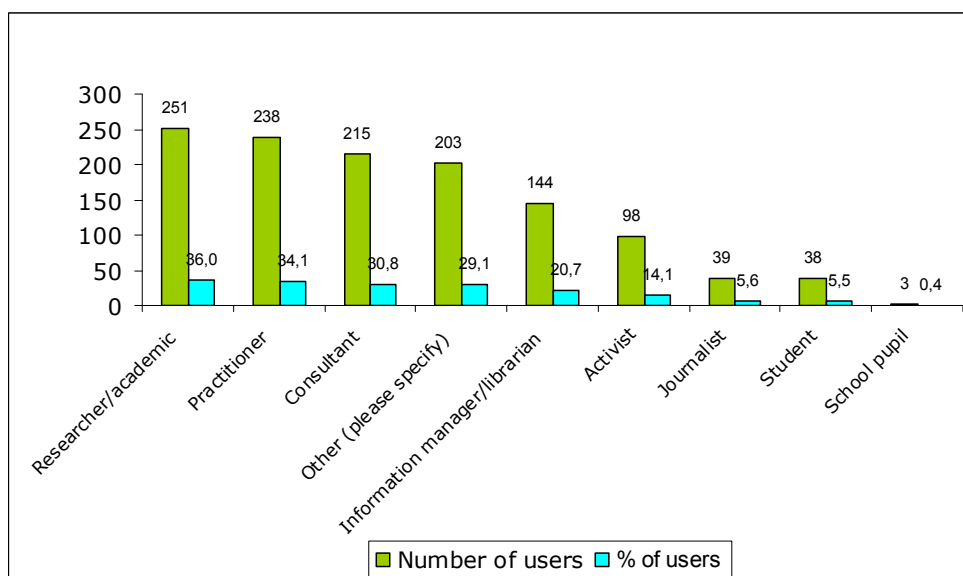


Figure 29 Professional experience of dgroups' users

Language divides

The technical interface for each dgroup workspace can be in English, French, Spanish or Portuguese. In addition to this, it is possible to have a multilingual interface.

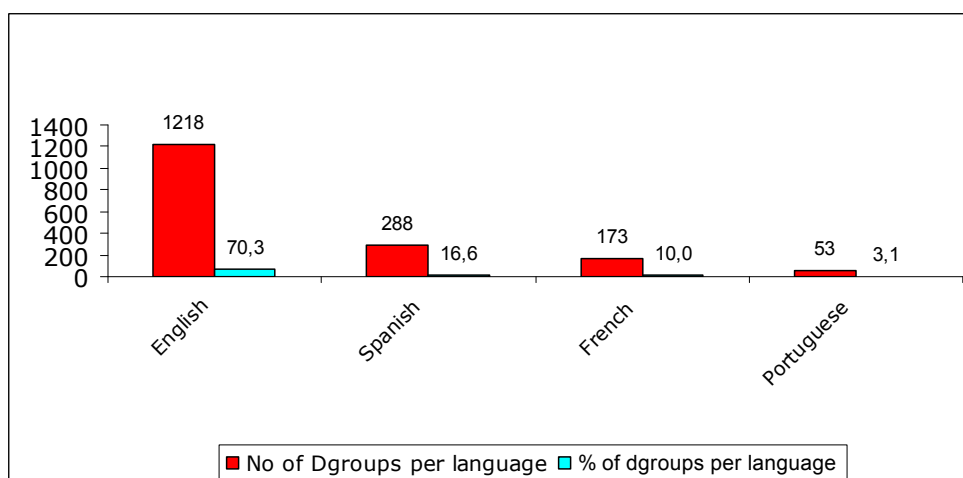


Figure 30 Language distribution of dgroups

Language		Dgroups in terms of language				Total	% of total
		Mono-lingual	Bi-lingual	Tri-lingual	Quadri-lingual		
English	No. of dgroups	1,520	102	27	37	1,686	83.0%
	% of English	90.2%	6.0%	1.0%	2.2%	100.0%	
French	No. of dgroups	55	12	1	0	68	3.3%
	% of French	80.9	17.6	1.5%	0.0%	100.0%	
Spanish	No. of dgroups	212	39	11	7	269	13.2%
	% of Spanish	78.8%	14.5%	4.0%	2.6%	100.0%	
Portuguese	No. of dgroups	7	2	0	0	9	0.4%
	% of Portuguese	77.7%	22.2%	0.0%	0.0%	100.0%	
Total		1,794	155	39	44	2,032	100.0%
Percentage of total		88.3%	7.6%	1.9%	2.2%	100.0%	

Table 3: Dgroups by language (January 2007)

Based on the web statistics provided by Bellanet, some 88.3% of the dgroups are monolingual (Table 3). Less than 12% are multi-lingual with 7.6% being bilingual. Based on these figures, there is not much evidence of dgroups crossing language divides on a large scale. This is probably because multilingual and bilingual interactions are difficult to facilitate effectively.

Search engine statistics give different results than web statistics in terms of language distribution because some dgroups are not searched for privacy reasons, as explained above. Search engine statistics identified that the language of dgroups was predominantly English (70.3%), followed by Spanish (16.6%), French (10.0%) and Portuguese (3.1%). It is clear that dgroups are predominantly English language with almost 30% in other languages. The results from Questionnaire 2 indicate that there are a number of groups being run in Arabic. The need for a new Arabic interface, to take such groups into account, will be included in the recommendations.

6.4 Development impact

It is outside the remit of this study to examine the socio-economic impact, namely the effect on poverty and social development, of dgroups on the ground in developing countries. In addition, establishing the development impact of information and knowledge sharing initiatives is fraught with the

problem of attribution (Gast 2003). Despite this, a number of conclusions can be made regarding dgroups which will have bearing on their development impact.

Costs of the platform

The cost of supporting the Dgroups platform until now has been approximately Euro 327,000 over a five year period (Akinsamni *et al*, 2007). This represents a cost per dgrouper per annum of Euro 60.7. This has been calculated by dividing the investment over five years by the calculated cumulative total number of dgroups per annum (5,365). This is not a very scientifically calculated figure, but it gives an idea of how accessible such a tool is for development organizations. For those organizations with experience of launching their own platform for online knowledge networks, the cost per group is substantially higher, possibly even up to 1,000 times higher per individual group (*confidential information, source cannot be quoted*).

Productive use of time

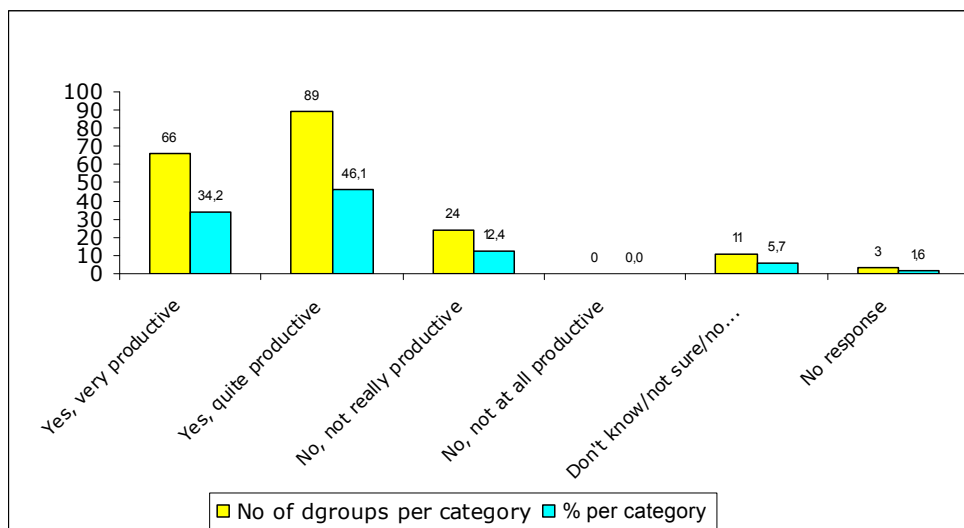


Figure 31 Moderators' assessment of productivity of time use

Some 80.3% of moderators felt that moderation and facilitation of dgroups was a 'very productive' or a 'quite productive' use of their time. Although 12.4% felt that their time was not really productive, none felt that their time was 'not at all productive'. There is no data available to compare how professionals working in the development field experience other work activities and whether they feel that these other activities are a productive use of their time. However, common sense argues that if more than 80% of professionals feel that dgroups represent a productive use of their time, that this is sufficient indication that dgroups are a very useful addition to the development tool kit.

Development impact

During the Smart Tools project, a group of information practitioners and experts discussed the evaluation of information products and services. In particular, the group was concerned with the issue of development impact. Given the problem of attribution mentioned briefly above, the group argued that it was difficult to determine the development impact of information related initiatives. Instead of measuring socio-economic change on the ground, the group developed a consensus that if the information or knowledge related initiative could demonstrate that it had led to organizational change, then it could logically be said to have had impact.

Although the evidence is by no means water-tight, the organizations that make the widest use of dgroups have arguably been subject to organizational change as a result. For example, when Michael Roberts of Bellanet was asked whether he was of the opinion that dgroups had changed the way his organization works, he replied:

Yes, for sure. How we worked before, and how we work now is very different. Dgroups is an effective tool, and it helps us to serve our mission, helping organizations to collaborate. We are really talking about organizational change.

When Nynke Kruiderynk of IICD was asked the same question, she replied:

IICD was one of the founder members of Dgroups. Dgroups were created to fill a need at IICD. An online community platform was necessary for IICD. If they hadn't been involved in starting Dgroups, they would have used Yahoo or Google groups.

What Nynke is saying here – and Beth Clarke's response from OneWorld was similar – is not so much that Dgroups is responsible for introducing new ways of working, but that Dgroups was used as a tool to support new ways of working. On the other hand, Peter Ballantyne (*personal communication, July 2007*) argues that dgroups were indeed responsible for introducing new ways of working:

I suspect new ways of working have also appeared based around dgroups. Most of the organizations I knew did not really know what the new ways of working were, until they found they were using them!

Robin van Kippersluis of SNV provides some insight into the ways in which use of dgroups have changed organizations:

Yes, [Dgroups] really has broadened the way people perceive and understand their own organization. Now staff members don't just refer to their own experience but have a more regional perspective which is something that we wanted to achieve. Dgroups has also facilitated the development of SNV as a horizontal organization – it has played a role in reducing hierarchy. It has also facilitated SNV as a matrix organization. This also relates to the 'double myth' of the organization.

In addition to these changes at the organizational level, it has already been demonstrated in this research report that dgroups support information and knowledge sharing, learning and collaborative work. Based on this evidence, it is argued that dgroups are having an impact on development, not only at the level of projects and programmes, but also in terms of organizational change.

What would have happened without Dgroups?

If the development sector can be divided into two groups of organizations, those who are Dgroups users and those who are not, where would the Dgroups partner organization be now if they had not started Dgroups in 2002? Although this is a rather theoretical point, it is supported by the experience of KIT with its own online groups (*Hardon 2005*).

In the absence of Dgroups, many of the partner and member organizations would probably have started their own platform for online groups. This is certainly probably the case for the high volume users. This would have a

number of consequences. Firstly, these organizations would have spent time and energy trying to determine which technology would be most appropriate: there would be emphasis on the technical aspects of performance. Secondly, they would have spent time and energy in designing their own interface: there would be emphasis on the design and look of the interface. Thirdly, related to these elements, there would be substantial costs involved. Fourthly, cross-organizational cooperation would be hampered, because there would be the drive to encourage partners to use the organization's own platform to make their investments worthwhile. Fifth, organizations would be using a huge number of different platforms and technology, with different specifications, different passwords, thus substantially reducing their accessibility. Sixth, there is no doubt, based on the experience of the FAO (*personal communication, Andrew Nadeau, January 2007*) and of KIT (*Hardon 2005*), that the accessibility to Southern partners of these groups would be substantially reduced. Finally, there are a large number of current initiatives that would be inconceivable without the existence of Dgroups to support their operation. For those organizations who did not start their own platforms or who were unable to piggy-back on the platforms of others, their ability to interact with other organizations and partners would be substantially reduced.

7 Conclusions

The number of dgroups has been increasing at a linear rate from 2002–July 2007, reaching 2308 by 15 July 2007. The rate of increase in the number of dgroups has been averaging some 500 groups per annum.

The number of dgroups' users has been increasing at a non-linear, sigmoid rate (demonstrating an S-curve) over the 2002–July 2007 period to 88,700 by 15 July 2007. The theory of diffusion of innovations (*Rogers 1962*) argues that this sigmoid rate of increase is characteristic of the adoption of new technologies. The highest number of new users was 26,993 in 2006. The estimate for 2007 is 26,746, a lower rate than 2006, which may indicate that the level of adoption may be reaching its peak.

The thematic coverage of dgroups is strongly related to information and knowledge and education and training, but seems to transcend a wide variety of thematic categories. Search engine statistics indicate that some 38% of dgroups have the thematic focus of 'information, knowledge and communication', while some 27% are concerned with 'education and training'. Data from the questionnaires, based on OECD Macrothesaurus subject categories, also indicate a strong focus on 'information, documentation' (59%) and 'education and training' (39%). Lo and Salas (2004) argue that the marked centralization in the 'information, knowledge and communication' theme is due to the fact that the partners and members who have opened the majority of the groups are organizations who work in this area. Although this conclusion is probably still valid, based on these figures, it is possible to argue that 'information, knowledge and communication' is used as a 'catch all' category. Given that online groups are by their very nature an information and knowledge management tool, it would be possible to argue that all dgroups are focused on 'information, knowledge and communication'.

When questionnaire respondents were asked to identify the thematic focus related to the MDGs, the most common focus identified was 'Goal 8: Developing a global partnership for development' (54% of dgroups), followed by 'Goal 1: Eradicate extreme hunger and poverty' (46%) and 'Goal 3: Promote gender equality and empowerment' (37%). Both 'Goal 8: Combat HIV/AIDS, malaria and other diseases' and 'Goal 7: Ensure environmental sustainability' were the focus of more than 30% each of dgroups. Respondents used a number of MDGs (an average of 2.4) to describe the thematic coverage of their dgroups. This demonstrates, together with other data that was collected, the broad thematic coverage of individual dgroups.

The key user population of dgroups appears to be roughly equally composed of men and women. The vast majority (more than 95%) of respondents had a tertiary level of education at university or college, while more than one fifth held a Ph.D.

In terms of organizational use of dgroups, Bellanet, IICD and OneWorld are 'high volume users' of dgroups, accounting for more than 65% of all dgroups and having created more than 400 dgroups each. 'Medium volume users' (World Bank, DFID, Hivos, CGIAR and ICA) had created 150-50 dgroups each. 'Low volume users' were generally relatively new users with less than 50 groups each (INASP, SNV, CTA, ICCO, FAO, KIT).

Based on responses from respondents, it was established that the most common size of dgroups was 21-40 users (24%) but there was a broad

distribution of dgroups with less than ten users to those with more than 201 users. Interestingly, some 12% of dgroups had more than 201 members.

The majority of dgroups, more than three-quarters of the total, supports the information and knowledge sharing of their users. More than half of dgroups also facilitate learning for their users, although less so than information and knowledge sharing. This information and knowledge sharing and learning is strongly related to the MDGs: most dgroups work in the thematic area of more than one MDG: on average they support 2.4 MDGs per dgroup. Dgroups clearly support gender-related development. The evidence from a variety of different sources demonstrates that:

- Both women and men appear to have an equal leadership role, namely 'administrator', within dgroups;
- More than 50% of all dgroups are focused on the issue of gender in the context of the MDGs;
- In addition to this, a number of organizations make use of dgroups to support their gender and women-focused initiatives.

The majority of dgroups are able to facilitate contact across North–South divides in terms of subject focus and linking users from both North and South. Evidence of South-South cooperation being facilitated by dgroups is more limited.

The majority of dgroups facilitate collaborative work across organizational boundaries, facilitating coherence, coordination and complementarity within the development field.

Users of dgroups come from a wide variety of professional groups, facilitating the bridging of development divides between the fields of research, policy and practice. Interestingly, users tend to have a variety of professional foci, breaking down traditional borders between research, policy and practice. However, policymakers are less strongly represented among dgroups' users. Dgroups make an important contribution to bridging the digital divide. Although they cannot, of course, address fundamental issues of connectivity, they make it possible for users with limited connectivity to participate. Dgroups are also heavily used by organizations trying to bridge the digital divide (for example, IICD, Hivos, Bellanet) so, in that sense they have an extra role to play. Although dgroups are available in four language settings (English, French, Spanish and Portuguese), there is very little evidence that dgroups are able to facilitate contact across language divides, given the very low number of multilingual workspaces. However, this is probably due to the difficulty of facilitating multilingual interactions.

Dgroups are having an impact on development at the level of projects and programmes, but also in terms of organizational change. It is concluded that Dgroups offers a unique resource, both in terms of its reach (number of users), but also in terms of the information and knowledge sharing and organizational change it is facilitating.

8 Recommendations

8.1 Follow up research

Further research could investigate the hypothesis that the knowledge sharing through dgroups is often the 'tip of the iceberg' as regards further information and knowledge sharing that is taking place. Further research could investigate the role of social capital within individual dgroups.

8.2 Making knowledge sharing more visible

Although there is a great deal of information and knowledge sharing is happening, the Dgroups Partnership should work on developing technical tools and instruments to make this information and knowledge sharing more visible to the outside world, partly because it will support good information and knowledge sharing behaviour, but also because it will demonstrate the added value of Dgroups to other organizations.

8.3 Alternative subject categories

In terms of collecting information of thematic coverage of dgroups, the MDGs, although disguising a number of important categories such as agriculture, economic development and culture, are preferred for development relevance over the subject categories that are currently used to describe dgroups. The current thematic categories used when starting up dgroups certainly disguise, for example, the focus on gender and women. A different range of categories, based on a combination of the MDGs and the OECD Macrothesaurus terms, is to be recommended.

8.4 Penetration of dgroups into Academia

Dgroups has not yet fully entered the world of research, certainly not in the Netherlands and probably not in other countries either, although many academics and students are users of dgroups. If the potential to break down knowledge divides between research and other professional groups is to be realized, experimental use of dgroups should be supported for the European Association of Development Research and Training Institutes (EADI).

8.5 Tapping the potential

There is tremendous potential in having all development online groups accessible through one platform in terms of linking initiatives and sharing information and knowledge resources. This potential has not yet been tapped. Ways of promoting cross-fertilization should receive priority from the Partnership.

8.6 Technical issues

The findings on the technical platform from the 2004 evaluation (*Lo and Salas 2004*) are still largely applicable. Technical renewal of the platform, which is becoming more and more necessary, should take these findings into account.

Appendix 1: Acknowledgements

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Finally, I hope that the results of the research project will support the Dgroups Partnership in its work and will facilitate a great understanding of what dgroups are doing for development.

Sarah Cummings
15 September 2007

Appendix 2: Overview of research questions

Objective	Specific objective	Research questions	Research sub-questions	Sources of information	Questions in survey instruments
To be able to make some generalizations about users of knowledge networks in development	To find out more about the people using dgroups	How many people are using dgroups	What is the total number and their respective roles?	Web statistics	
		What is the age distribution of the study population?	What is the age distribution of administrators	Questionnaire survey of administrators	How old are you?
			What is the age distribution of all users	Survey of individual dgroups	How old are you?
		What is the gender of the study population?	What is the gender distribution of administrators?	Questionnaire survey of administrators	Simple choice: m/f
			What is the gender distribution of all users	Survey of individual dgroups	
		What are the education attainments of the study population?	What are the educational attainments of administrators?	Questionnaire survey of administrators	What is your highest level of educational attainment?
			What are the educational attainments of all users?	Survey of individual dgroups	
		What is the location of users?	North/South location	Web statistics	Analysis of e-mail addresses
				Survey of individual dgroups	In which country do you live?
				Questionnaire survey of administrators	
		What is the professional experience and affiliation of all users	Proportion of development professionals using dgroups?	Based on estimates of the total population nationally (Netherlands) and internationally	
			What is users' organizational affiliation?	Survey of individual dgroups	What is your organizational affiliation?
				Questionnaire survey of administrators	
			What professional work are users doing?	Survey of individual dgroups	How would you describe yourself (researcher, practitioners, policymakers, activist, other.)
				Questionnaire survey of administrators	
			What are the characteristics of lurkers?	Focus group meeting of non-users of dgroups	

Objective	Specific objective	Research questions	Research sub-questions	Sources of information	Questions in survey instruments
To investigate the meta-characteristics of online knowledge networks?			What are the differences between lurkers and active users?	Focus group meeting of lurkers	
				Survey of individual dgroups	Do you post messages or resources to this Dgroup?
				Questionnaire survey of administrators	What proportion of members contributes to the Dgroup by posting messages or resources?
			To what extent are development professionals using other online networks?	Questionnaire survey of administrators	Are you using other online networks as well as dgroups?
				Survey of individual dgroups	
	To investigate the meta-characteristics of dgroups	How many dgroups are there?	Total Number of dgroups?	Web statistics	Number of dgroups
			When were individual dgroups started?		When were dgroups started?
			How many dgroups have been closed down?		When were dgroups closed down?
		How long have individual dgroups existed?	How does length of existence effect other variables?	Questionnaire survey of administrators	When was this Dgroup started?
				Survey of individual dgroups	
		What is the geographical focus of dgroups?		Web statistics	Number of dgroups per country
					Number of dgroups per region and global dgroups
				Questionnaire survey of administrators	What is the geographical focus of this Dgroup?
		What is the thematic coverage of dgroups		Survey of individual dgroups	What is the geographical focus of this Dgroup?
				Web statistics	Number of dgroups per theme
				Questionnaire survey of administrators	What is the theme of this Dgroup?
				Survey of individual dgroups	
		What is the linguistic coverage of dgroups?	Which linguistic interfaces does dgroups offer?	Web statistics	Number of dgroups per language (specify if they are monolingual, bilingual trilingual)
				Questionnaire survey of administrators	In which language is your Dgroup interface?

Objective	Specific objective	Research questions	Research sub-questions	Sources of information	Questions in survey instruments
		Examination of some other key Dgroup characteristics	How many members do individual dgroups have?	Questionnaire survey of administrators Survey of individual dgroups	How many members are in this Dgroup?
			Which skins are dgroups using?	Web statistics	Number of dgroups per skin
			What proportion of dgroups are open or closed (public/private)?	Web statistics	Database question: Who can view this workspace? Database question: Who can contribute to this workspace?
				Questionnaire survey of administrators Survey of individual dgroups	Is this an open/public or closed/private Dgroup?
		Some questions relating to the actability, function and success of dgroups	How many dgroups are active?	Web statistics	The proportion of dgroups that have received more than one message in the past 4 week period
				Questionnaire survey of administrators Survey of individual dgroups	Has your Dgroup received at least one message in the past 4 week period?
			What is a(n) (un)successful Dgroup?	Questionnaire survey of administrators	What factors determine the success of a Dgroup (no of users, message traffic, meeting objectives, resources being uploaded)
				Case studies of partner/member organizations	Cite examples of successful (and unsuccessful) dgroups
				Interview with representatives of partner/member organizations	What factors determine the failure of a Dgroup (no of users, message traffic, meeting objectives, resources being uploaded)
			How important to the success of the Dgroup is the moderator?	Interview with representatives of partner/member organizations	Do you feel that the role of moderator is key to the success of a Dgroup?
		What is the role of social capital in dgroups	What is the role of social capital in the functioning of individual dgroups?	Survey of individual dgroups	Not sure how to tackle this one yet...

Objective	Specific objective	Research questions	Research sub-questions	Sources of information	Questions in survey instruments
		What knowledge is being shared using dgroups?	What is the number of messages being posted in dgroups	Web statistics	What is the total number of messages being posted in dgroups
					What is the average number of messages per group?
				Questionnaire survey of administrators	How many messages have been posted in total on the Dgroup?
				Survey of individual dgroups	
			What is the total number of resources, excluding messages, being shared on dgroups?	Web statistics	What is the total number of resources?
					What is the average number of resources per Dgroup?
				Questionnaire survey of administrators	How many resources (documents, links, news) have been posted onto the Dgroup?
			What proportion of Dgroup users have ever posted a message or resource?	Questionnaire survey of administrators	How many users have ever posted a message or resource to this Dgroup?
				Survey of individual dgroups	Have you ever posted a message or resource to this Dgroup?
To establish how dgroups are organized	To find out how dgroups are organized and to make recommendations for future development	Who are the members and partner organizations?	Why did they join dgroups?	Case study of partner organizations	
			How do they use dgroups?	Case study of partner organizations	
			How many dgroups have they created?	Web statistics	
		What are the strengths/weaknesses of the Dgroups partnership	What are the strengths/weaknesses of the partnership?	Review of partnership documents	
			What are the strengths/weaknesses of the platform?	Interviews with organizational representatives and architects	

Objective	Specific objective	Research questions	Research sub-questions	Sources of information	Questions in survey instruments
To investigate whether online knowledge networks help to cross development divides?	To investigate whether dgroups cross development divides?	Do dgroups cross thematic divides?	What is the thematic coverage of dgroups?	Web statistics	
			How does the thematic coverage relate to the MDGs?	Questionnaire survey of administrators	On what themes is this Dgroup focused?
				Survey of individual dgroups	
			Is there evidence of interdisciplinary?	Survey of individual dgroups	Do you feel that this Dgroup is interdisciplinary in nature? (Not very happy about this question...)
				Questionnaire survey of administrators	
		Do dgroups cross the North-South divide	What proportion of users are located in the South?	Web statistics	E-mail address analysis
				Questionnaire survey of administrators	What proportion of members are located in the South?
				Survey of individual dgroups	Where do you live?
			Is it common to find North and Southern based users in the same Dgroup?	Survey of individual dgroups	
			To what extent are dgroups partners/members starting up dgroups for their Southern partners?	Interviews with organizational representatives	
			Which dgroups have been started for Southern partners?	Survey of individual dgroups	
		Do dgroups cross South-South divide?	Are there dgroups that represent South-South cooperation?	Survey of individual dgroups	
			How do the African dgroups compare with those in Asia and Latin America	Survey of individual dgroups	
		Do dgroups cross professional divides?	What is the user population of in terms of profession?	Survey of individual dgroups	What sort of development professional are you?
				Questionnaire survey of administrators	Which categories of development professional are to be found in this Dgroup?
			Is there evidence of knowledge sharing between different professional groups?	Survey of individual dgroups	Are these categories sharing knowledge with each other?
				Questionnaire survey of administrators	

Objective	Specific objective	Research questions	Research sub-questions	Sources of information	Questions in survey instruments
		Do dgroups cross language divides?	Is there evidence of multidisciplinary?	Questionnaire survey of administrators	Which categories of development professional are to be found in this Dgroup?
			In which language are the dgroups?	Web statistics	In which language are users communicating on dgroups?
			How many people are communicating in their mother tongue/non-mother tongue?	Questionnaire survey of administrators	Are you communicating in a language that is not your mother tongue?
				Survey of individual dgroups	In which language are users communicating on dgroups?
			What is the language of the dgroups partners?	Review of partnership documents	What proportion are in which language
			How do users perceive the crossing of language divides?	Questionnaire survey of administrators	Do you feel that this Dgroup facilitates communication between people with a different mother-tongue?
				Survey of individual dgroups	
		Do dgroups cross gender divides?	What proportion of men/women are active in dgroups	Web statistics?	
			What are the roles of men/women in dgroups	Questionnaire survey of administrators	What is the gender balance in terms of administrators/users/moderators etc
				Case studies of representative sample of dgroups (including user survey)	
			How many dgroups (and what proportion) are working on the theme 'women and gender'	Web statistics	Look at start up category
				Survey of individual dgroups	Is this Dgroup working on women and gender?
				Questionnaire survey of administrators	
		Are dgroups able to bridge the digital divide?	How is users' access to the Internet?	Survey of individual dgroups	How is your access to the Internet?
				Questionnaire survey of administrators	

Objective	Specific objective	Research questions	Research sub-questions	Sources of information	Questions in survey instruments
			To what extent are dgroups able to be inclusive to those who have limited access to the Internet?	Questionnaire survey of administrators Interviews with representatives of partner/member organizations	Do you feel that Internet access is a barrier to some members of this Dgroup?
What is the development impact of online knowledge networks?	What is the development impact of dgroups?	What is the impact of dgroups on institutions?	How have dgroups changed institutions?	Questionnaire survey of administrators	Do you feel that the use of dgroups has changed the way your organization works?
				Interviews with representatives of partner/member organizations	
		What is the impact of dgroups on projects/programmes?	Have dgroups changed projects and programmes?	Questionnaire survey of administrators	Do you feel that the use of dgroups has changed the projects and programmes are implemented?
				Interviews with representatives of partner/member organizations	
		Do dgroups constitute an effective addition to the development toolbox?	Identify and measure the skills and competencies of moderators	Interviews with representatives of partner/member organizations	What skills and competencies are required of moderators?
			Time investment	Survey of individual dgroups	On average over the past 6 months, how much time per month have you spent on this Dgroup?
					Do you feel that this has been a productive use of your time?
				Questionnaire survey of administrators	On average over the past 6 months, how much time per month have you spent on this Dgroup?
					Do you feel that this has been a productive use of your time?
			Have dgroups brought widespread use of online knowledge networks to development?	Questionnaire survey of administrators	Was use of dgroups your first experience with online knowledge networks?
				Case studies of representative sample of dgroups (including user survey)	
			New ways of working	Questionnaire survey of administrators	Have dgroups allowed you to work in new

Objective	Specific objective	Research questions	Research sub-questions	Sources of information	Questions in survey instruments
				Case studies of representative sample of dgroups (including user survey) Interviews with a representative sample of dgroups (including user survey)	
How do knowledge networks stimulate knowledge sharing and learning within development?	How do dgroups stimulate knowledge sharing in development?	Do dgroups stimulate KS between individuals?	Are dgroups used to share knowledge?	Questionnaire survey of administrators	Do you think members of this Dgroup use it to share information/knowledge with each other?
		Do dgroups stimulate KS within groups?		Survey of individual dgroups	Do you use this Dgroup to share information and knowledge with others?
		Do dgroups stimulate KS within organizations?	How do dgroups fit into intra-organizational KS strategies?	Interviews with representatives of partner/member organizations	Does your organization have a KS strategy? Is Dgroups part of your organization's internal KS strategy?
				Case studies with a representative sample of dgroups (including user survey)	Do you use dgroups to share knowledge with colleagues in your organization?
		Do dgroups stimulate KS between organizations?	How do dgroups fit into inter-organizational KS strategies?	Interviews with representatives of partner/member organizations	Does your organization have an external KS strategy? Is Dgroups part of your organization's external KS strategy?
				Questionnaire survey of administrators	Is Dgroups part of your organization's external KS strategy?
				Survey of individual dgroups	Do you use dgroups to share knowledge with colleagues in other organizations?
	How do dgroups stimulate learning in development?	Do dgroups stimulate individual learning within development?	Do dgroups stimulate learning by individuals?	Case studies of representative sample of dgroups (including user survey) Questionnaire survey of administrators	Do you as an individual learn from your participation in dgroups?
		Do dgroups stimulate social learning within development?	Do dgroups stimulate learning within groups?	Case studies of representative sample of dgroups (including user survey)	Do think that dgroups facilitates the development of common approaches?

Objective	Specific objective	Research questions	Research sub-questions	Sources of information	Questions in survey instruments
				Questionnaire survey of administrators	
		Do dgroups stimulate (intraorganizational learning within development?	How are dgroups applied in organizational learning?	Interviews with representatives of partner/member organizations	
		Do dgroups stimulate interorganizational learning within development?	How are dgroups applied in interorganizational learning?	Interviews with representatives of partner/member organizations	

Appendix 3: Bibliography

- Akinsamni, Titi, Andrea Aranguren, Manju Chatani, Nynke Kruiderink and Theresa Stanton (2007) 'Development through Dialogue: a showcase of Dgroups from three perspectives: institutional, project and capacity development level'. Knowledge Management for Development Journal, 3(1): 49-67.
<http://www.km4dev.org/journal/index.php/km4dj/article/view/93>
- Box, L. and Maartje van der Zwet (1990) New wine on old grounds: knowledge network and cluster development among vintners in the trans-border Limburg region.
<http://www.fdcw.unimaas.nl/personal/WebSitesMWT/Box/literature/New%20wine%20on%20old%20grounds%5B1%5D.doc>
- Cummings, Sarah, Richard Heeks and Marleen Huysman (2006) Knowledge and learning in online networks in development: a social capital perspective. Development in Practice, 16(6): 570-586.
- Cummings, Sarah, Julie Ferguson, Peter J. Bury, Atanu Garai, Baharul Islam and Patrick Ngulube (2006) Editorial: On knowledge divides and joined up thinking – anybody interested? Knowledge Management for Development Journal, 2(3): 1-4.
<http://www.km4dev.org/journal/index.php/km4dj/article/view/86/129>
- Chorlavi Group (2006) Building a social learning network 1998-2005, Santiago: Centro Latinoamericano para el Desarrollo Rural.
http://www.idrc.ca/en/ev-101192-201-1-DO_TOPIC.html
- Egger, Urs (2004) International networks for knowledge sharing: lesson learnt?, St. Gallen, Skat.
<http://www.skat-foundation.org/publications/prarticle.2005-09-29.9740306251/skatpublication.2005-11-21.5829205549/file>
- Engel, Paul G.H. (1997) The social organization of innovation: a focus on stakeholder interaction, Amsterdam: KIT/CTA/STOAS.
- Ferguson, Julie E., and Sarah Cummings (in press) Knowledge management in practice: the case of international development.
- Gast, Lisette (2003) 'Well begun is half done: telling the IICD story of evaluation'. Information Development, 19(2): 85-89.
- Hardon, Anne (2005) 'Virtual knowledge communities: lessons learned in making them work'. Knowledge Management for Development Journal, 1(1): 71-78.
<http://www.km4dev.org/journal/index.php/km4dj/article/viewFile/8/27>
- Hivos (2005) 'Join the dgroups community'. Hivos International, 11(1): 2.
<http://www.hivos.nl/index.php/content/download/5158/29851/file/HI%20may%202005EN.pdf>
- Lo, Rosa Cheng and Margarita Salas (2004) Characterization of Dgroups in Latin America: final report, unpublished paper. Fundación Acceso.
http://home.bellanet.org/modules/DownloadsPlus/uploads/Annual_Reports/DgroupsEval-EN-Final.pdf

MacKinnon, Rebecca (2006) 'Race to the bottom: corporate complicity in Chinese Internet censorship'. Human Rights Watch, 18(8).
<http://www.hrw.org/reports/2006/china0806/>

Maxwell, Simon and Paul Engel with Ralf J. Leiteritz, James Mackie, David Sunderland and Bettina Woll (2003) European Development Cooperation to 2010, ECDPM Discussion Paper 48. ODI Working Paper 219.
http://www.odi.org.uk/publications/working_papers/wp219.pdf
[http://www.ecdpm.org/Web_ECDPM/Web/Content/Download.nsf/0/7402724671E93FEBC1256D5F0045DB9F/\\$FILE/03-48e%20SMaxwell%20PEngel.pdf](http://www.ecdpm.org/Web_ECDPM/Web/Content/Download.nsf/0/7402724671E93FEBC1256D5F0045DB9F/$FILE/03-48e%20SMaxwell%20PEngel.pdf)

Michelson, Heike. (2003) 'Improving benefits from transnational partnerships'. Paper presented at the 2nd triennial GFAR conference Linking Research and Rural innovation to Sustainable Development, held on 22-24 May 2003.
<http://www.fao.org/docs/eims/upload/207626/GFAR2003-04-04b.en.pdf>

Rogers, Everett M. (1962) Diffusion of innovations. New York: The Free Press.

Sax, Linda J, Shannon K. Gilmartin, Jenny J. Lee and Linda S. Hagedorn (2003) 'Using web surveys to reach community college students: an analysis of response rates and response bias'. Paper presented at the annual meeting of the Association of Institutional Research (AIR).
http://www.usc.edu/dept/education/truccs/Papers/nonresponse_truccs_AIR%20final.pdf

Wenger, Etienne (1999) Communities of practice: learning, meanings and identity, Cambridge: Cambridge University Press.

WIDE (2004) European Feminist Online Forum. WIDE News, 11: 4.
http://womnet.de/content/upload/2004_News_11.pdf

Willard, Teri (2001) Helping knowledge networks work: Version 1.0, Winnipeg: International Institute for Sustainable Development (IISD).
http://www.iisd.org/pdf/2001/networks_teamwork.pdf