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A CONCEPTUAL FRAMEWORK FOR E-LEARNING IN DEVELOPING COUNTRIES: A CRITICAL REVIEW OF RESEARCH CHALLENGES

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ABSTRACT
This paper presents a critical review of research on challenges for e-learning with a particular focus on developing countries. A comprehensive literature review including 60 papers on e-learning challenges was undertaken for the purpose of understanding how to implement e-learning in developing countries. Research questions were: what has existing research identified as the major challenges for e-learning, and, what differences, if any, are there between developing countries and developed countries in this respect? The literature study found 278 papers which were condensed to 60 based on exclusion and inclusion criteria designed to find papers of best quality as well as papers that clearly investigated well-defined challenges. The research found 30 specific challenges which were grouped into four categories, viz.: courses, individuals, technology and context. The overall conclusion is that these challenges are equally valid for both developed and developing countries; however in developing countries more papers focus on access to technology and context whereas in developed countries more papers concern individuals. A further finding is that most papers focus on one or two categories of challenges; few papers exhibit a comprehensive view. Because challenges are interrelated, based on the findings we propose a conceptual framework of emerging issues for e-learning in developed and developing countries. The framework is useful to guide both practice and research.

KEYWORDS
e-learning, challenges, literature review, conceptual framework, developing countries

1. INTRODUCTION

E-learning has started to make way into developing countries and is believed to have huge potential for governments struggling to meet a growing demand for education while facing an escalating shortage of teachers (UNESCO, 2006). E-learning is seen as a tool for raising the number of students who have access to higher education, especially marginalized groups in rural areas, by being a cheaper and more flexible alternative (Dhanarajan, 2001; Patton, 2000; Potashnik and Capper, 1998). Challenges are however plentiful; in many developing countries there is a lack of vital e-learning components such as computers, electricity and skills (Dhanarajan, 2001; Heeks, 2002; Rajesh, 2003); and the active, participative student that is required for interactive learning is also very rare in countries where the tradition is to teach in a more didactic manner (Eastmond, 2000; Evans, 2005; Sehrt, 2003). For those concerned with implementing e-learning in developing countries it is important to understand all challenges. Because e-learning most often is being transferred from the developed world we need to know not only what challenges that are already found and to some extent met in the developed countries, there is also a need to understand which additional challenges, if any, there may be in developing countries. As one example, drop-out rates from e-learning educations in the developed world are still much higher than in traditional, classroom based, teaching (Levy, 2007; O'Connor et al., 2003; Romiszowski, 2004) even though there are examples of impressive improvements; throughput at Swedish university level distance

tuition is today over 60 % according to the Swedish Agency for Networks and Cooperation in Higher Education (NSHU, 2007). To understand if such improvements can be made in, for example, Bangladesh in the same way it was done in Sweden there is a need to understand which the e-learning challenges are. By identifying and categorizing e-learning challenges addressed by research in both developed countries and developing countries this paper provides a comprehensive conceptual framework that (a) covers the whole field conceptually, and (b) pays special attention to the potential differences. By "covering the whole field conceptually" we mean that all factors we have found in the literature are covered by the conceptual model. Also, any factor relevant to education, as discussed in pedagogical literature in general and the e-learning sub-field in particular, can be incorporated within it.

The overarching goal with this research was for it to be used as a tool for guiding upcoming empirical work in developing countries, hence there were two complementary research questions, (1) What has existing research identified as the major challenges for e-learning?, and (2) What differences, if any, concerning challenges for e-learning are there between developing countries and developed countries?

The paper is organized as follows: Next section presents the methodological approach. Thereafter the result of the literature study is presented according to a categorization on two dimensions; the focus of the studies and the target unit of the research. Finally findings are discussed and a conceptual framework for e-learning is proposed.

2. METHOD

In order to achieve a comprehensive charting of challenges for e-learning a literature search was undertaken to locate as many different challenges as possible. Hence, at the first step there were very few exclusion criteria. All types of distance learning supported *to some extent* by *any* information and communication technology were included. Due to the focus on distance learning, technology that is only used within a physical classroom was excluded. This focus was motivated by the fact that the major advantages for developing countries are supposedly achieved by overcoming the problems of distance and huge student populations which in many cases have problems at all getting to school.

Two main methods were employed for this search. The first was to use our University's academic search engine which covers several academic databases such as ABI/Inform, Blackwell Synergy, EBSCO, ScienceDirect, SpringerLink and Wiley. The second was to consult Google Scholar (http://scholar.google.com/) which covers more publications but is less structured and provides also more low quality material. Search terms used were: "e-learning, E-learning, eLearning, online learning, virtual learning, distance learning, distance education, ICT based distance education" in combination with "challenges, enablers, disablers, obstacles, drop-out, retention, attrition, successful, unsuccessful" and all words were used in different combinations.

Papers were initially selected based on title and abstract. The initial wide search yielded 278 papers. These papers were then considered more in detail and most were excluded based on the following factors:

1. They were not addressing challenges per see, but rather reported so called "success stories" where the reasons for this success were never made explicit.
2. They where highly commercial (institutes wanting to sell their own e-learning courses or software).
3. They where very technical (describing different protocols or algorithms used in creating the e-learning platform).

4. They were not relevant in regard to the delimitation made on the e-learning definition, e.g. papers referring to so called "instructional technology" only used in a physical classroom.
5. Access to the papers entailed costs that could not be motivated as the content was unclear.

Beyond this relevance check controls were made for the 89 remaining papers to ensure coverage of the whole field and paper quality:

Coverage: Because the whole population of e-learning papers is not known we could not apply any statistic method to understand when we have properly represented the whole field. Hence the "snowball method" was used to find new challenges (e.g. looking into the reference list of "accepted" papers to see if there are similar ones) and saturation was used as the stop criterion: we stopped the search when new papers no longer provided new challenges.

Quality: First, a source (origin) check was made. The document has to have been accepted for a journal (paper), a conference (conference proceeding) or by a university (thesis or public report). There has been no assessment as to the quality of the journal or conferences themselves mainly because research from developing countries tend not to be published in major reputable forums but was still needed for this research. Second, as a validity check, the methods used by the papers to make a claim were assessed. Cases where claims are clearly dubious, claims that were beyond what is reasonable given the method used (Grönlund, 2004) were removed. It should be mentioned, however, that this validity check was somewhat more generous when it comes to papers addressing developing countries. The research field on e-learning in developing countries is young and there have been difficulties, with exceptions of course, to find quality papers or reports from many developing countries. Finally, for that very same reason, some articles addressing issues in developed countries were left unused because of the aim to have an even distribution between papers addressing developing and developed countries; there is far more research on e-learning in developed countries. To have two groups of papers the same size we simply cut at paper 30; this was the total number of papers from the developing countries that we had found using the above methods. Surplus papers were discarded according to the principle 'last in first out'. All in all this made the study end up with 60 papers; 30 addressing developed countries and 30 addressing developing countries.

Given this method we have covered the field conceptually if not statistically. While the ensuing analysis covers only 60 papers the total number of challenges is a result from a very wide search and analysis of 287 papers. No challenge found in the whole set of papers has been discarded.

The final step was to analyze the content of the 60 remaining papers to investigate the nature of the challenges. This was done in an iterative interpretive manner. Challenges, quotations and statements were extracted from all papers, from the sections Abstract, Result and Conclusion (or equivalent). These quotations were inserted into an Access database created for this purpose where they were interpreted into different categories regarding what challenges were addressed and what was the unit of study (type of country). The database eventually ended up with almost 500 statements and quotations on factors that are said to have an affect on e-learning. All quotations were analysed and interpreted in a hermeneutic cycling manner where a preliminary list of emergent issues was inserted into a column called "possible challenge". The first themes and challenges thereby stem directly from the quotations. There were not always clear cuts between different challenges and some statements required a more thorough reading of the paper. In a second cycle relations and

patterns were looked for to see if statements for each factor really belonged together which led to some challenges being united whereas others were split.

The second categorization, if papers were addressing developed or developing countries, is based on reports from the United Nations (UN, 2009) and the World Bank (WorldBank, 2007). In the later category papers having a global focus (including developing countries) have been positioned. For a full list of all categorizations made please refer to the Appendix.

The final outcome of this interpretation and categorization of challenges is a conceptual framework on e-learning challenges including four main categories.

3. E-LEARNING CHALLENGES CATEGORISED

This section will review the different challenges the papers have addressed and categorize them according to their focus unit. Regarding the focus unit of study the 60 papers found by the search can be divided into four broad strands: *Course* challenges - content, design and delivery (40 papers address challenges in this area); Challenges related to *characteristics of the individual,* student or the teacher (32 papers); *technological challenges* (25 papers); and *contextual challenges* – organisational, cultural and societal challenges (23 papers address challenges in this area).

3.1 Course

The most frequently mentioned challenges concern issues relating to the course given. Concerns are raised about the content of the course, the activities undertaken during the course, the support functions provided, and the delivery mode of the course. The first issue identified here is the *curriculum* which stipulates much of the course actions and content. There are discussions on the need to develop new curricula specifically designed for an e-learning setting; thereby showing awareness that e-learning is different from traditional class-room based teaching. The choice of *pedagogical model* is also found to have effects on learning. There are discussions on which pedagogical methods are appropriate for e-learning and many discussions concern a shift from a more instructor-centred approach to a learner-oriented approach where the students take ownership of their learning. The *subject content* of the course also matters and refers to what is actually being taught or learned. Some discuss whether the content is interesting and relevant, accurate, up to date and in line with the needs of future employers. The *Teaching and Learning Activities* (TLAs) used during a course evidently affects e-learning and is widely discussed in the papers. Some researchers address this issue in terms of the need for interesting learning interactions or how attractive design improves learning and motivation but most research have come to explicit suggestions on what activities are needed. Some activities described are frequent follow-ups, teacher interventions and continuous assessments. Other activities concern the students' choice between self studies or group work (referring to the level of interaction with other participants). Much research show that students in distance mode misses social engagement and a feeling of being involved; a commonly stated reason for not passing a course or dropping out is that the student is left to self-studies, feeling alienated and isolated.

Another course issue is the delivery mode of the course. One talks about different levels of *flexibility* and how much personalisation is needed for the students to be able to pass a course. The factor concerns whether students should be allowed to learn at their own pace and take the examinations when they want and if they should be allowed to choose the medium of content delivery. This factor is often discussed in a context of the global mobility of learners where the education is not nation-bound. *Localization* is also discussed. It is claimed that there is a need for the content to consider religious beliefs, use local language,

have relevance for a local setting and match with local needs. Images and symbols used should be appropriate for the local culture in order to not be offensive or simply confusing.

Other course related topics refer to which *support functions* are provided during the course. Regarding this issue e-learning is very different from traditional classroom teaching where support is given and questions answered face-to-face. Contact or intervention from the institution to its students and support from the tutor or other staff (including IT-support) are said to improve learning and pass rates. The support can be the institution calling up students before the course starts asking if they will attend or how he or she is progressing or just making sure there is an IT support unit for the students. The main point is to not let the student be confused and in lack of understanding. The teachers and staff delivering the course will also need *faculty support*. The level of support available for teachers and staff makes a difference where teachers generally are more motivated and committed when they feel supported by their schools. The schools can support the teachers by providing technical support, training, assistance or just showing the commitment of the institutional leaders.

3.2 Individuals' Characteristics

The characteristics of the individual student, and in some cases the teacher, are much researched in developed countries, less so in developing ones. Student *motivation* is a factor that is frequently discussed in surveys on what affects students' satisfaction and capacity. Highly motivated students perform well in most cases whereas non-motivated students tend to drop out. The relation between motivation and other e-learning factors is rarely elaborated; the reasons for success or failure in the studies are simply referred to as "personal motivation" or "lack of motivation". Another factor is *conflicting priorities,* which has to do with the amount of time students have to, and want to, devote to the course. Having enough time for learning is an important predictor of a students learning and retention and those who study more hours are generally more successful in their studies. Students say they feel stressed and that they have big problems in arrangement of the time for the program due to conflicting priorities with work and family commitments. A third concern is the student's *economy* and the economic prerequisites for studying. Financial difficulties and lack of student funding can be a predictor of student withdrawal. The student's *academic confidence* seems to be another good predictor of a student's success or failure in e-learning courses. According to some research academic factors such as previous academic experience and qualifications are the best predictors of a student's performance. Academic confidence can also be about the student's self-efficacy, which is the student's confidence in his or her ability to study and successfully complete the course. The students also need some *technological confidence*; just having access to the technology is obviously not enough. The students also need to have the necessary computer skills and feel confident in using computers. Lack of experience with computers can be a major hindrance for learning especially for students who are entirely new to computers whereas computer confidence accounts for much of the predictive power of good achievements. Finally, student *age* and *gender* are factors reported to make a difference in their progress.

A further aspect, not directly related to the student's personal characteristics (but to individual circumstances), which has an impact on the students performance is the home environment. A stable and supportive study environment affect e-learning to a very large extent and some research even suggest that this is the most important factor influencing drop out and retention. *Social support* can be about the time and help the student get from family and friends (parents influence is very important here), but also about the attitudes on studying in itself; being told it is good to study and not having family members complaining about the student neglecting other duties. For those students who are working they are also in need of

support from employer. This support can take any form from not creating barriers to learning to having mandatory company completion policies.

The research in this category sometimes also analyses features of the teacher delivering the course. Just as was the case with students, the teachers' confidence in using computers and other technologies, their *technological confidence***,** matters. Moreover the teachers and trainers level of *motivation and commitment* makes a difference. This factor concerns the teachers' motivation for teaching at a distance and their ability to see benefits of e-learning tools and techniques. It also concerns their commitment in the e-learning classes; when teachers put little effort into giving feedback students tend to either drop out or not pass. Finally, the teachers' *qualification and competence* (in general and in online teaching in particular) and the *time* they have available for developing and taking part in e-learning courses matters.

3.3 Technological Challenges

This category concerns the "e" in e-learning and refers to technological requirements. Issues discussed are choices of technologies – radio, computers, audio cassettes, different Learning Management Systems (LMS) and so forth; the costs of using the technologies, how they are accessed and in what language they are available. One commonly discussed factor is *access*. The use of ICT for distance education evidently makes access to the technology an enabling or disabling factor and in developing countries the issue of access is often discussed in terms of availability of so called telecentres and Internet cafés. Access refers not only to whether one has physical access to a computer and an Internet connection, but also to the reliability of the connection and the bandwidth – basically everything that is needed to access the full range of the content needed. A second factor is the *cost* of these technologies. This factor is only discussed in developing countries where there is a need for affordable and low-cost ICT alternatives (such as television, radio and telephones) and low user charges. A third factor corresponding to the technology is the *software and interface design*. Aspects that are discussed are whether the LMS chosen supports the chosen learning model and pedagogy and if the software is easy to use (i.e. human-computer-interaction issues). Finally there is the issue of *localization*; to what extent the technology and software should be adapted in order to fit local culture and languages. Most research suggests that localisation is of benefit for the students and the language used is often a good predictor of outcome. Localization in this case is about embedding cultural and religious values and aesthetics into the design of the technology and software.

3.4 Contextual Factors

The context of e-learning includes the context of the delivering organisation (typically a university setting) as well as the context of the society in which the e-learning takes place, including culture, traditions, rules and regulations.

Research addressing the delivering organisation is mainly concerned with the organisation and management of the delivery side's functions and the need for changes in organizational structures. A frequently addressed issue here is that of the organisation's *knowledge management* or knowledge building. This factor is addressed in terms of the need for a knowledge repository built on research and evaluations and some discuss the importance of sharing experiences among e-learning institutions and to establish e-learning units. E-learning programs also need *economy and funding* for their activities (both in terms of human resource development and for the technology). In the papers this issue is also discussed in terms of getting return of investments and cost sharing for e-learning projects. Another institutional issue is to make provision for the required *training of teachers and staff*, an often neglected factor.

Research on societal factors focuses on culture, traditions, rules and regulations. Societies hold many values and beliefs that impact on education. One factor identified in this study is that of the *roles of teacher and student*. One issue here is how the power distance between teacher and student that affects the e-learning; where power distance is a measure of the inequality between bosses and inferiors and the extent to which this is accepted (Hofstede, 1984). In many countries children and students are taught to show respect for those older and the teacher is regarded as the expert who teaches wisdom and who cannot be questioned. In teaching cultures where learners act as receivers e-learning will be challenging - teacher dependency and students used to being spoon-fed are known obstacles to learning at a distance. The classroom as the only natural forum for teaching and learning can in some cases be strongly built into the minds of teachers and students and the asynchronous approach most often used in e-learning is unfamiliar for many students. This makes them feel uncomfortable when forced to abandon the traditional instructor-led learning style. All other actors in a society also hold attitudes and relevant in this case is the *attitude on e-Learning and IT*. Papers address how beliefs and attitudes of decision-makers in a political system will affect the growth of both technology and e-learning in a country. Political backing and support from policy makers will ensure that appropriate policies are made and also encourage schools to adopt e-learning. Bureaucratic hurdles due to attitudes are reported and sometimes the teachers and students themselves are questioning the credibility of e-learning courses with the perception of e-learning being inferior to traditional courses. Finally, there are *rules and regulations* affecting e-learning. Cases of governmental regulatory barriers to the introduction of ICT for learning are reported and e-learning courses are sometimes run without proper mandate from the authorities. Other issues that need dealing with are rules and regulations concerning intellectual property, copyright, filtering and censorship.

From this analysis emerges a picture of a large number of challenges which are only partially understood, in particular when taken together. The papers analyzed typically study one or a very small number of factors. It appears clear that each of these factors may have some influence, but it is not clear how they interact. To better understand e-learning there is clearly a need for more systematic research using more factors. Even so, let us now turn to the issue of whether or not there is a difference between developing and developed countries.

3.5 Comparing Developed and Developing Countries

The second research question concerned whether or not there were differences in challenges between developing and developed countries. Table 1 charts the number of papers pertaining to each of the four main categories of challenges. Note that some papers bring up more than one issue; there are only 30 papers in each column. The table shows that while course is a frequent topic everywhere, there are differences for the other categories. While factors pertaining to the individual are frequent in developing countries, more papers concerning developing countries focus rather on technology and context. Because our investigation is qualitative – trying to find a complete set of challenges and investigate the nature of them – rather than quantitative, counting numbers is not enough to determine whether there are differences in challenges. The fact that only 6 papers on developing countries concern factors related to the individual does not mean that these factors are not interesting, just that the current focus is mainly elsewhere. The fact that numbers differ may in fact just be a result of our search method: because we looked for challenges we stopped when no new challenges were found.

Table 1. Comparison of number of papers addressing different challenges for e-learning

Research focus	Developed countries	Developing countries
Course	17	23
Individual	26	6
Technology	7	18
Context	2	21
Sum	52	68

It is likely, however, that the differences are not only a consequence of our search method. As our descriptions of challenges above indicate, clearly technical infrastructure, student technological capabilities, and the pedagogical contexts of developing countries pose challenges. It does not seem far-fetched to assume that building a technical infrastructure appears far more urgent to many developing countries than investigating students' motivation.

However, in terms of challenges for e-learning it seems fair to conclude that challenges related to individuals' will appear later. Looking back to the discussions in the developed countries, we may recall the strong focus on infrastructure in the 1990s when Internet infrastructure had to be built everywhere. Based on this survey it appears these factors are now in the background. It is also reasonable that contextual factors need more research. After all, e-learning was developed in the developed countries so that particular context was incorporated already from the start. A less friendly interpretation of the context-focus in research on developing countries (particularly in regards to 'culture') is that it is a symptom of a top-down, western dominant research agenda where researchers conduct research on 'underdeveloped, hard-to-understand' people - i.e. in a lack of understanding the e-learning problems in developing countries it is assumed that these problems must have something to do with 'their culture'.

In summary, we note that all challenges are brought up in both columns in Table 1. This means that all challenges on our list are relevant to both developed and developing countries. Based on the qualitative analysis of the challenges we can conclude that factors pertaining to individuals are indeed important also in the context of developing countries.

4. A COMPREHENSIVE CONCEPTUAL FRAMEWORK

The previous sections have shown that the four major strands of challenges (individual, technology, course and context) are very broad, each individually representing a set of sub-challenges. Even if applying a generous analysis by only mapping the research studies with the larger categories (which means that the study assessed may only map to one of the sub-challenges in each category) we find very few holistic approaches. The mean value of addressed categories for each research study is two (see appendix); only three of the 60 papers used in this study address all four categories; and as many as 21 address only one single category. We have also shown that while all factors appear to be universally relevant the focus differs depending on the kind of country (developed or developing).

Perhaps most compellingly, the literature study showed that factors affecting e-learning cover a broad spectrum of categories are not conclusively defined and researched, and the relative importance of which is not clearly understood; there is virtually no whole-systems perspective. Factors "are typically studied in isolation and contextual factors are effectively ignored" (Halperin, 2005, p.53). This makes a case for not exclusively looking at one single category or factor when discussing e-learning challenges. Against this backdrop we have constructed a comprehensive framework for the purpose of providing a common understanding of the whole system of e-learning. Such a framework is useful for many

reasons. First, it nicely summarizes research so far. Second, it points to the need of assessing research in a whole-system perspective. Any research on some of the variables needs to be put into the context of all of the others. Eventually this will lead to a better understanding of how different factors in combination support or hinder development of good e-learning setups and conditions.

The literature study yielded thirty challenges belonging to four main categories; Challenges pertaining to *individuals' characteristics* (both students and teachers); *technological* challenges; *course* challenges (different support functions, the course itself with its pedagogy and activities); and *contextual* challenges (the institutional management and organisation as well as the surrounding society with its values and regulations). Table 2 summarizes these findings.

Table 2. Framework on challenges for e-learning

Individual challenges	*Student* • Motivation • Conflicting priorities • Economy • Academic confidence • Technological confidence • Social support (support from home and employers) • Gender • Age *Teacher* • Technological confidence • Motivation and commitment • Qualification and competence • Time
Course challenges	*Course design* • Curriculum • Pedagogical model • Subject content • Teaching and Learning Activities • Localization • Flexibility *Support provided* • Support for students from faculty Support for faculty
Contextual challenges	*Organisational* • Knowledge management • Economy and funding • Training of teachers and staff *Societal/Cultural* • Role of teacher and student • Attitudes on e-learning and IT • Rules and regulations

Technological challenges	• Access • Cost • Software and interface design • Localization

5. CONCLUSION

This paper set out to answer two research questions: "What has existing research identified as the major challenges for e-learning?" and "Is there a difference concerning challenges for e-learning between developing countries and developed countries?"

This paper has identified 30 challenges for e-learning that were grouped under four main categories:

1. *Course challenges*: Research concerned with content, design and delivery of courses;
2. Challenges pertinent to *individuals' characteristics*, students as well as teachers;
3. *Technological challenges*: Research concerned with infrastructure, costs, usability and appropriateness of technology;
4. *Contextual challenges*: Research concerned with organisational, cultural and societal challenges.

Regarding the second research question this paper has shown that while all challenges are relevant also for developing countries there is currently an emphasis on technology and contextual factors whereas factors pertinent to individuals' characteristics, much researched in developed countries, are not yet high on the agenda in developing countries. Following the changes of focus in developed countries since the 1990s this can be expected to change as e-learning becomes more commonly implemented. For example we found that the hierarchical teaching methods in many developing countries will have to develop into a pedagogy more oriented towards students' activities, self-learning and motivation. This is a step change as it will change inherited roles on part of students as well as teachers. Such a major change will necessitate a focus on individuals' activities and perceptions, and how the changes to education brought about by e-learning affect, and are affected by, these.

The major contribution of this paper is to develop a comprehensive conceptual framework on challenges for e-learning in developing countries. This is a contribution to practice as the framework can be used as a check-list of factors that should be addressed when designing a project. It is also a contribution to research as it can be used to guide research, both in focus and in outcomes. In focus, because the framework helps understand which factors are currently under-researched and should be given more focus. In outcomes, because outcomes of research on any factor should be related to the other factors. E-learning is a system and for it to be best designed there needs to be a balance between all important factors. Research can help not only by further researching individual factors but also, and in particular, by understanding combinations of factors. There is no single best e-learning design; all the factors in the framework must be taken into consideration. So far this is typically not done which makes most research 'not seeing the forest for the trees'. This framework can help by providing a shared framework against which efforts can be measured.

APPENDIX: Research papers conducted in, or targeting, developed versus developing countries (including research focus)

Developed countries				
Focus/ Study	Individual	Technology	Course	Context
(Ashby, 2004)	X		X	
(Bolliger, 2004)	X	X	X	
(Brown et al., 2006)	X			
(Bruckman, 2002)			X	x
(Chyung, 2001)	X		X	
(Frankola, 2001)	X			
(Galusha, 1998)	X	X	X	x
(Gammill and Newman, 2005)	X		X	
(Govindasamy, 2001)			X	
(Jiang and Ting, 2000)			X	
(Jones et al., 2004)	X	X	X	
(Jun, 2005)	X			
(Lee, 2001)	X		X	
(Levy, 2007)	X			
(Mason and Weller, 2000)	X		X	
(Muse, 2003)	X	X		
(O'Connor et al., 2003)	X		X	
(Osborn, 2000, 2001)	X			
(Parker, 1999)	X			
(Paulsen, 2003)			X	
(Pérez Cereijo, 2006)	X			
(Phillips et al., 2004)	X			
(Sandler, 2000)	X			
(Schrum and Hong, 2002)	X	X	X	
(Simpson, 2004)	X		X	
(Totter et al., 2006)	X		X	
(Wheeler and Amiotte, 2005)	X			
(Wu et al., 2006)	X	X		
(Yukselturk and Inan, 2004)	X			
(Zhang et al., 2004)	X	X	X	
= 30	26	7	17	2
Developing countries and/or global focus				
(Abdon et al., 2007)	X	X	X	
(Aczel et al., 2008)		X	X	X
(Ambe-Uva, 2006)			X	
(Berman, 2008)		X		
(Bhalalusesa, 2001)			X	X
(Bollag and Overland, 2001)		X	X	X

(Burn and Thongprasert, 2005)				X
(Dhanarajan, 2001)		X	X	X
(Eastmond, 2000)		X	X	X
(Evans, 2005)		X	X	X
(Fozdar et al., 2006)		X	X	X
(Friesner and Hart, 2004)				X
(Gulati, 2008)		X		X
(Islam and Doyle, 2008)		X	X	
(Keller and Suzuki, 2004)	X		X	
(Kember, 1989)	X		X	
(Khan, 1997; Khan and Morrison, 2003)		X	X	X
(Lentell and O´Rourke, 2004)			X	X
(Librero et al., 2007)		X		
(Mar, 2004)		X	X	X
(Martey, 2004)		X		
(Melinda de la Pena, 2007)	X	X	X	X
(Pagram and Pagram, 2006)			X	X
(Patton, 2000)			X	
(Rahman, 2006)			X	X
(Rajesh, 2003)		X		X
(Reeves and Reeves, 1997)	X		X	X
(Safavi, 2008)			X	X
(Siritongthaworn et al., 2006)	X	X	X	X
(Usun, 2004)*		X	X	X
= 30	6	18	23	21

Number of categories addressed (all papers):
Number of studies with only one category addressed: 21
Number of studies with two categories addressed: 21
Number of studies with three categories addressed: 15
Number of studies with all categories addressed: 3
Mean value of categories addressed: 2

* The study was conducted in Turkey but the author refers to Turkey as a developing country and is therefore positioned in this category of research papers

Note: Please feel free to contact Annika Andersson at annika.andersson@oru.se if you are interested in a full account of which factors were addressed by each research study.

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