

DISTANCE EDUCATION RESEARCH FIELDS AND METHODS

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***Abstract:** The research fields and methodology of distance education as academic discipline include multidimensional object which consists of the educational process, tools used, characteristics of participants (teacher and students), organizational culture, cultural as well as economic aspects. Olaf Zawacki-Richter and Terry Anderson (ed. 2014) divided them into three levels: macro (systems / models and cultural aspects), meso (organization, management, technology, costs, innovations, professional development, ways of learner's support, quality assurance), micro (design, interaction and communication patterns, characteristics of teacher and learners, dropouts). Research field include humanities and social sciences, computer sciences, educational technology.*

Keywords: distance education (DE), research field, research discipline, research area, methodology.

INTRODUCTION: INTERDISCIPLINARITY OF THE RESEARCH ON DE

In this study distance education (DE) is defined as a set of educational activities without direct contact between the student and the tutor. It includes preparation and conducting of: correspondence education, educational websites, online forums, blogs, chat rooms, classes in augmented reality (for example „Second Life”), profiles on social networks and complementary teaching i.e. blended learning in addition to activities traditionally carried out in the class rooms, as well as designing and delivery of a fully DE online courses. Study of those is complicated by technological variability of the test subject, its many aspects and its cultural characteristics.

Andrew Pickering rightly noted that nowadays these are not the scientific revolutions but rather technological ones which change history of research, because technological progress is ahead of the research, and the practice is ahead of theory (Pickering 1994: 418). Current research methods are not sufficient to

conceptualise the new areas of knowledge. These observations also apply to DE research, because it is conditioned by the development of technology.

1. SCIENTIFIC DISCIPLINE, TITLE AND PROFESSION MISSING IN POLAND

DE courses which are prepared in higher education centers vary in quality. This contributes sometimes to promotion of wrong patterns among students and poor quality of DE. In this situation, studies on DE in Poland seem to be necessary. It requires extensive competence.

The importance of DE is growing. Most probably, therefore, in the near future there will also be increased demand for professionals in this field in Poland – not only for specialists in the field of *Informational Technology in Education*, but also for so called *instructional designers*. According to David Merrill [t]he purpose of *instructional design is to develop experiences and environments which facilitate the student's acquisition of (...) knowledge and skill* (Merrill et al. 1966: 2). However, such academic specializations do not exist in Poland, although in the classification of occupations listed eg.: *distance education methods specialist, examiner on-line, media educator, multimedia education methods specialist, on-line teacher* (Ministry of Family, Labour and Social Policy 2014).

Clarifying the field of research and research methods related to DE could become a basis for recognition of *Information Technology in Education* as a field of knowledge in Poland, as well as a basis for granting degrees in this field similarly as it is the case in Western Europe, where it is possible to obtain a title of *Professor of Information Technology in Education* („King’s College London“.

Despite the growing social demand for DE and investing public funds for buying necessary equipment by educational and academic institutions, those responsible for delivery of DE do not always receive necessary organizational and technical support. This results in the formation of harmful myths about education supported by computer (Morbiter 2002; Mischke 2005) and discouragement of those who undertook tutoring in DE. Though the fact that DE requires high and diverse qualifications, usage of sophisticated technologies and performance of time-consuming tasks it is looked down at in Polish higher education institutions, when compared to traditional teaching activities in the form of delivering lectures and tutorials in classrooms. DE as didactic activity is not taken into consideration (or scored) in the procedure of assessment of the employee’s job performance and ignored during evaluation of their academic achievements (Mischke 2006). This state of affairs results in decrease in interest in distant forms of education and in publications on this topic.

Currently, some Polish universities employ IT specialists, graphic designers, educators and other specialists to assist academic tutors in preparing and delivering DE. Their work is not considered academic work similarly as designing and

conducting DE courses by academics even at universities which do not employ persons to support DE activities. Academics, therefore, deliver DE without additional remuneration and without technical support. There is a similar situation in Polish primary, junior secondary and secondary schools (Chomczynski 2015).

2. RESEARCH OF DISTANCE EDUCATION IN POLAND

Research on DE in Poland is needed especially because of the complicated cultural context of the Polish media. In a post-communist country with *newly emerging public broadcasters* (Jakubowicz, 2005: 9-10) there is lack of models of autonomy. Main newspapers, magazines, Internet portals, television and radio stations are usually owned by foreign companies. In this situation, if e-courses' materials are not selected with due criticism, especially by students, other media penetrate DE with consumer syndrome elements and patterns dominating in pop-culture. In the era of media convergence, it impacts the shape of DE, especially in humanities and social sciences, because the availability and popularity of the resources shape distant discourse and didactic process.

Every technology – thus also DE – after a phase of a rapid evolution goes into recession and then stabilizes its development. In order to stabilize growth one needs to draw conclusions from past experiences, that is to examine the current development of DE, especially its weaknesses, myths and threats.

It seems that in Poland the period of expectations regarding reducing costs of education, personalizing the educational contents and dissemination of education with DE has passed. Quickly it turned out that extramural education requires organizational and legal regulations, large financial investment in hardware, software and system support (Mischke 1997). Tutors turned out to be even more necessary as guides among the vast amount of information when compared with traditional teaching forms (Lubina 2004).

DE did not contribute to the spread of education, and only the most motivated participants complete DE courses (Meger 2008 a). To many, who are insufficiently motivated (especially young people below 18 years of age), *anyplace, anywhere, anytime and any device* means procrastination of learning till later date and becomes *nowhere, never and no device*.

3. PURPOSE, METHOD AND RESEARCH MATERIAL

This study proposes listing of the fields of research related to DE and selection of appropriate testing methods. The purpose of this analysis is to attempt to establish a research field for *Information Technology in Education* adequate to Polish reality, and at the same time to inspire researchers, teachers, trainers, administrators and students to navigate wider areas and to recognize the complexity of DE.

Proposal of DE research presented below is associated with practice:

- A. Delivering online courses (2012-2016, preparation and delivery of dozens of editions of 34 DE courses, including 7 completely distance ones and two university-wide lectures).
- B. Training courses for students and staff of the Pedagogical University in Cracow.
- C. Activities in the Rector's Committee for Distance Education (Rektorska Komisja ds. Zdalnych Form Kształcenia), which approves courses for distance delivery.
- D. Participating in conferences, online discussions and meetings of the Cracow local group of the Association of Academic E-learning (krakowska Grupa Lokalna Stowarzyszenia E-learningu Akademickiego).
- E. Literature review to investigate and qualify examples of research fields and methods contained within DE.

Fields and disciplines of sciences and arts have been developed on the basis of the the analysis of the following documents:

- A. *Załącznik do rozporządzenia Ministra Nauki i Szkolnictwa Wyższego w sprawie obszarów wiedzy, dziedzin nauki i sztuki oraz dyscyplin naukowych i artystycznych [Annex to the Regulation of the Minister of Science and Higher Education in the areas of knowledge, fields of science and art, and scientific and artistic disciplines]*, 8 August 2011.
- B. *UNESCO nomenclature for fields of science and technology* (1974 with amendmends).
- C. OECD (Organisation for Economic Co-operation and Development) *Revised field of science and technology (FOS) classification in the "Frascati manual"* (2007).
- D. *List of categories, areas, disciplines and research fields* published on the site of *Japan Society for the Promotion of Science* (2012).

Due to the extent of the problems associated with DE, research fields were divided into levels: macro, meso and micro according to the proposition of Zawacki-Richter and Anderson.

4. RESEARCH FIELDS OF DE

Research fields of DE contain for example to such disciplines and research approaches, as:

1. anthropology (cultural anthropology: ethnography, ethnology, ethno-linguistics, myths; social anthropology: chiefdom),

2. business administration (commerce),
3. cognitive science (neuroscience, psychology of mind),
4. computer sciences (artificial intelligence, automated quality control systems, data banks, informatics: software, computer system, network, database, intelligent informatics),
5. cultural property science,
6. cultural studies,
7. demographics (age distribution, biological characteristics, general demographic structures, sex, socio-economic characteristics),
8. economics (applied economics, economic statistics, economic policy),
9. education (adult education, education on school subjects and activities, sociology of education, special needs education),
10. educational technology (educational theory and methods),
11. electrical and electronic engineering (communication, network engineering),
12. ethics (classical ethics, ethics of individuals, ethics of science, group ethics),
13. geography (human geography),
14. history (historical studies in general, history of science and technology, history of Poland, Europe and America),
15. informatology,
16. law (fundamental law, public law, social law, civil law, new fields of law),
17. library and information science,
18. linguistics (applied linguistics: automated documentation, computational linguistics, documentation, language and literature, bilingualism),
19. media studies,
20. pedagogy (educational theory and methods, learning disabilities, organization and planning education, career and status of teachers, teacher training and employment),
21. philosophy (philosophical anthropology: aesthetics, philosophy of action, philosophy of imagination, philosophy of intersubjectivity, philosophy of will, knowledge and science),
22. political science (cultural policy, educational policy, information policy, science and technology policy, social policy),

23. politics (politics, international relations, public opinion),
24. psychology (educational psychology, experimental psychology: brain functions, development psychology, occupational and personnel psychology, school psychology, social psychology, mental retardation),
25. safety system science (social system engineering),
26. science of arts and letters (cinematography, fine arts theory, analysis and criticism, photographic and cinematographic equipment),
27. science of cognition and social communication,
28. science education, educational technology,
29. sociology (occupational sociology, sociology of education, sociology of science),
30. statistical science,
31. technological sciences (telecommunications technology, audio-electronics, broadcasting, sound and television),
32. new multidisciplinary fields (area studies, gender).

The study of DE includes research into the educational process, tools used, characteristics of participants (teachers and students), organisational culture, regulations of cultural as well as economic aspects. Therefore, DE is a multidimensional phenomenon and not just the electronic equivalent of a spoken dialogue of a teacher with their students. Researchers come from different academic backgrounds and work on different topics focusing on research themes of interest to them. As a result, researchers present only selected aspects of DE.

5. TEST METHODS IN THE FIELD OF DE

Researchers of DE cross different disciplines in order to take advantage of theories and tools. The test methods of DE refer to large quantities of information (for example *cohort studies*, *content analysis*), current events (*action research*), they characterize educational policy (*case studies*), and even relate to predicting the future (*trend studies*). Research on DE, hence, requires a number of competencies and the application of sophisticated research tools, as it is in the case of *cognitive science* and *cultural studies*. Because the subject of the study is vast and susceptible to change, thus the researchers create a *performance model of knowledge* (Munévar 1981). Selection of the best solutions becomes the tool of educational change. This is a difficult challenge, therefore publications incorporating different aspects of DE are scarce (Kubiak 2000; Juszczak, 2002; Siemieniecki, 2005; Zawacki-Richter and Anderson 2014).

Research of DE may be conducted for example in the form of: action research, analyses, biographical method, case studies, cohort studies, comparative analyses,

content analyses, correlational studies, critical discourse analysis, critical incidents (Tripp 1993), diagnostic survey, document analysis, educational experiment, exploration, interview (and projective techniques), journaling, literature reviews, methodological considerations, observation, overview, report on implementation, sociometric techniques, statements, trend studies. Quantitative, qualitative and mixed methods can be used.

Due to strong links with technology there is lack of research carried out by humanists, hence e.g. linguistic methods such as critical discourse analysis are practically non-existent (Wodak, Meyer 2009). Moreover, researchers all across the globe represent a variety of academic disciplines, which results in a wide range of reasearch tools they use.

6. LEVELS OF SUBJECT OF INVESTIGATION

6.1. Macro level

6.1.1. Macro research problems, disciplines and fields

Problems researched on macro level include:

- A. **History** of DE related to technologies and their applications in different regions.
- B. **Systems** of DE including problems of access, equity, digital devices, role of institutions in the process of developing DE courses.
- C. **Theories** of learning: modeling the action of the senses and the brain, knowledge construction, social constructivism, connectivism (Siemens 2004).
- D. **Models** of DE connected with formal and informal teaching and training, including social media, mobile learning, immersive learning environments, *Massive Open Online Courses* (MOOCs), educational clouds, portable and wearable devices (as watches, helmets) and subcutaneous chips.
- E. **Cultural** aspects related to cultural policy, role of language, visual communication, cultural context, cultural differences, cross-cultural aspects, globalization of education.

6.1.2. Macro research questions

Research questions to be asked on macro level include:

A. **History** of DE.

1. What are the differences between the earlier and contemporary forms of DE in various regions?

2. What are the similarities between correspondence education and DE delivered with the use of the Internet?
3. What methods were to be used for researching DE?

B. Systems of DE.

1. What methods are to be used for researching the internet activity of teachers?
2. In what way do resources used in DE contribute to construction of social reality?
3. How does DE transform traditional teaching and the role of institutions dealing with it?
4. What social issues and relationships are revealed and reinforced during DE?
5. What is the role of institutional partnership in transnational cooperation in the area of DE?
6. What is the role of higher education institutions and professional associations in transnational cooperation in improving practice?
7. How does a student's behaviour correlate with behaviour of other users of a DE course?
8. What is the globalization of DE? What is the development of global educational market?
9. What are characteristics of teaching in mediated environment?
10. What are characteristics of education in multicultural environment?

C. Theories of learning

1. How are the senses and the brain modelled during DE?
2. What are the directions of knowledge transfer in DE?
3. What structure of knowledge is promoted by DE?
4. How does DE affect the didactics and interdisciplinary integration?

D. Models

1. How DE is connected with formal and informal teaching and training?
2. How and for what purpose in DE are used: social media, mobile learning, immersive learning environments, *Massive Open Online Courses* (MOOCs), educational clouds, portable and wearable devices (as watches, helmets) and subcutaneous chips?

E. Cultural aspects.

1. How do users of commercial educational portals perceive a particular academic discipline?
2. What are the myths contained in resources of a DE course / internet site?
3. What are the roles of DE resources and infrastructure in developing countries?
4. What abilities and competencies should a person who prepares and runs DE have?
5. How does DE influence perception of the role of teachers? How does it change the teacher's role? (Lubina 2004)
6. What ethical challenges arise in connection with DE? (Hruby 2014)
7. How does DE contribute to formation / devastation of the axiological capital?
8. What should be the role of the state and the local authorities in the promotion of DE? (Sysło 2009)
9. Does the quality of DE correlate with the level of development of individual countries? If so, how?
10. What is the impact of DE on legal issues, especially on copyright?
11. What activities are available to students and pupils? How do they vary in different cultural backgrounds?
12. What linguistic image of education is contained in names of educational websites?
13. What is communicated to the users via visual images? How is it communicated?
14. What image of education is contained in the logos of educational sites and distance courses?
15. What linguistic image of the user is contained in the names of educational sites?
16. What is the mechanism of gaining leadership in educational discussions on internet forums and on social networks?
17. To what extent does the content of DE reflect public opinion?

6.1.3. Summary table relating to macro level

In the table below, examples of research disciplines and research methods developed by John W. Creswell (2012) and other authors were assigned to examples of research topics on macro level.

Table 1.**Themes, research fields and test methods for DE on macro level**

Research themes	Research disciplines	Examples of research methods
History of DE	<i>Anthropology, history, human geography</i>	<i>Analysis of documents, case study, content analysis (archival research), literature review, report on implementation</i>
Systems of DE	<i>Informatics, safety system science, science education</i>	<i>Case study, comparative analysis, correlational studies, focus group, questionnaire</i>
Theories	<i>Educational technology, history of science and technology, pedagogy, philosophy</i>	<i>Case study, content analysis (comparative research), interview, questionnaire</i>
Models	<i>Informatics, politics, science of cognition and social communication, sociology</i>	<i>Case study, comparative analysis, methodological considerations, overview</i>
Cultural aspects	<i>Anthropology, cultural studies, electrical and electronic engineering, linguistics, politics, political science, sociology, psychology, sociology of education</i>	<i>Action research, analysis of documents, case study (ethnographic research), cohort studies, content analysis, critical discourse analysis methods, interview, narrative research, observation, questionnaire, trend studies</i>

Source: Own work

It follows that the macro level includes a large database, therefore may be used quantitative research.

6.2. Meso level

6.2.1. Meso research problems, disciplines and fields

Problems researched on meso level include:

- A. **Organization:** administration, infrastructure, costs, benefits, professional development.
- B. **Management:** ways of learner support, quality assurance, staff workloads and tenure.
- C. **Technology:** programs, innovations.

- D. Traditional and new **education methods** and techniques – for example: flipped classroom, WebQuest, e-portfolios, visual learning analytics (Conde et al. 2015).
- E. **Quality assurance**: methods of control, method of appointment quality assurance authorities, linguistic forms of quality assessment.

6.2.2. Meso research questions

Research questions on meso-level include:

A. How does **organization** of work affect the quality of DE?

1. What is the role of online tutors, instructional designers, counselors, and support staff?
2. How does delivering of DE correlate with university, school and teacher reputation?
3. Does the organization of the course foster interaction, discussion, reflection and collaboration?
4. What are benefits of providing online education? What are benefits of participation in online education?
5. What is the impact of DE, MOOCs, educational resources with free access and Information and Communications Technology (ICT) on increasing or decreasing the digital divide?
6. What is the quality of educational resources with unlimited access created by commercial entities as content marketing?
7. What is the value of open online universities, freely accessible course materials, open textbooks and research publications?
8. What is the value of non-institutional knowledge resources such as „Wikipedia“, „Google Books“?
9. What kind of support is required by participants of DE, the teacher and provider of DE?

B. How does **management** affect the quality of DE?

1. What is the role of associations, teacher training centers and higher education institutions (especially pedagogical) in developing of new organizational arrangements and teaching methods in the field of DE? (Dudek 2012).
2. How do institutions promote DE? How do they hinder its delivery? (Dudek 2012).
3. How do higher education institutions encourage / discourage employees to conduct DE?

4. What kind of hardware and software is provided by higher education institutions / schools? Are these sufficient to deliver DE?
 5. When are the principles: *bring your own Personal Computer (BYOPC)*, *bring your own device (BYOD)*, *bring your own technology (BYOT)* forced upon those who prepare and deliver DE?
 6. Is overtime, expenditure on equipment and software and increased availability of teaching staff in DE rewarded? If yes, how?
 7. What kind of competences are required from an online teacher? What kind of competences are required from an online student?
 8. How much does it cost an employee to prepare and deliver DE? How much does it cost an institution?
 9. What are the costs and burdens associated with preparation and delivery of DE?
 10. What are the workloads and tenure (employment status) of people delivering DE?
 11. What business models characterize DE when it comes to the return of investment?
 12. Who prepares Massive Open Online Courses? Who utilise them?
 13. What is the cost of effective support for learners?
 14. What characteristics should a well prepared DE course have? [Association of Academic E-learning (Stowarzyszenie E-learningu Akademickiego)]
- C. How does **technology** affect the quality of DE?
1. What kind of infrastructure is provided to DE by commercial institutions, and what by higher education institutions?
 2. What actions can students perform in DE?
 3. To what extent does DE utilise technologies 2.0 and 3.0, synchronous and asynchronous media and mobile applications?
 4. Is there a provision on the use of resources by persons with disabilities and special needs?
- D. What **education methods** are used in delivery of DE courses?
1. What is the relationship between DE, continuing education and lifelong learning?
 2. To what extent are Open Educational Resources used in DE?
 3. What is the relationship between DE teaching content and content implemented during blended learning and traditional learning?

4. What is the relationship between DE content and course program?
5. Does DE support the planned delivery of classes and examinations and access to the results of assessment? If yes, how?
6. Does DE assist with minimizing curriculum discrepancies? If yes, how?
7. What is the role of motivation in DE? (Meger 2008 a)
8. What motivational strategies can be used in DE? (Meger 2008)
9. What theories and teaching methods apply to DE?
10. What should be the didactics of e-learning? (Bednarek, Lubina 2008).
11. What is the attitude of students enrolled in teaching degrees towards DE?
12. How do students enrolled in teaching degrees utilise DE during their placements?

D. What are the DE **quality assurance** measures?

1. What methods should be used to study DE quality assurance?
2. Who controls the quality of DE? Why?
3. What are the criteria of DE quality assurance?
4. What is represented by linguistic forms of DE quality assurance?

6.2.3. Summary table relating to meso level

In the table below examples of research disciplines and examples of research methods were assigned to examples of research topics on meso-level.

Table 2.

Themes, research fields and test methods for DE on meso level

Research themes	Research disciplines	Examples of research methods
Organization	<i>Business administration, economics, ethics, law</i>	<i>Action research, analysis of documents, case study, observation, sociometric techniques</i>
Management	<i>Business administration, economics, ethics, political science</i>	<i>Action research, case study, interview, observation, questionnaire, statement</i>
Technology	<i>Informatics</i>	<i>Analysis of documents, case study, trend studies</i>
Learning	<i>Education, educational</i>	<i>Case study, content analysis,</i>

methods	<i>technology, linguistics, psychology, science education</i>	<i>critical discourse analysis methods</i>
Quality assurance	<i>Business administration, economics, education, educational technology, electrical and electronic engineering, ethics, law, linguistics. psychology, science education</i>	<i>Action research, analysis of documents, case study, cohort studies, content analysis, correlational studies, critical discourse analysis methods, interview, longitudinal survey, narrative research, questionnaire</i>

Source: Own work

It follows that the meso level often involves only few phenomena, and therefore here may be used comparative research.

6.3. Micro level

6.3.1. Micro research problems, disciplines and fields

Problems addressed in the research on the micro level are:

- A. **Resources:** origin, relationship to other communications media, quality, order, usefulness.
- B. **Teaching:** interactions teacher – users and communication patterns, teacher's characteristics including language, behaviour and actions.
- C. **Learning:** learner's characteristics, their actions, understanding of knowledge, interactions and communication patterns, language behaviour, dropout.

D. Instructional **design:** construction of learning content and communication. Zawacki-Richter and Anderson, basing of a large-scale content analysis of five major journals publishing articles on DE, stated: *[t]he micro-perspective (teaching and learning in distance education) is highly overrepresented* (2014: 5), because it occurred that the most frequently researched topics included: user interactions, instructional design and learner characteristics. Most neglected were economic aspects, innovations, management and cross-cultural issues. However, these neglected topics from macro and meso levels are crucial in the current realities.

6.3.2. Micro research questions

Micro level research questions include:

- A. What is the origin of the **resources** used in DE?
 1. What institutions or bodies produced resources used in online courses?
 2. What is the relevance and quality of the resources used in the DE?
 3. What is the relationship of the course / site resources to communications of other media?

4. What is the quality of information design / architecture on DE site / DE course?
 5. Which of the current scientific theories important to a given discipline are included in the resources of the DE course?
 6. To what extent DE may be useful for vocational training?
- B. What is the methodical and technical preparation of the teacher to **teaching**?
1. What linguistic forms used by the teacher reflect their relationship with the students?
 2. What are the social and professional competences of DE teacher?
 3. In what way do high / insufficient competences of DE teachers impact on the work, behaviour and relations of the students?
 4. What is the teacher's age and gender?
 5. What is the teacher's culture and scientific discipline?
 6. What is the teacher's level of media literacy?
 7. What is the tutor's perception of reality?
 8. What are the assessment practices? Do students have possibility of self-evaluation?
 9. How do students perceive knowledge? How do they obtain it?
- C. What kind of collaboration opportunities are provided for **learning** to students?
1. Was creation of online communities made possible? Were they created?
 2. What are the characteristics of interactions between DE students?
 3. How users address one another and the tutor?
 4. How linguistic forms reflect emotions and DE participants relations?
 5. How do users of DE present themselves in autopfiles and on general forums?
 6. What is the participants' age and gender? What is their cultural background?
 7. How are cultural and gender differences manifested?
 8. What social and economic backgrounds do DE students have?
 9. How often do individual participants of DE access DE sites? How much time do they spend on DE resources?
 10. What are the media competences of students participating in DE?

11. What approaches to learning are presented by the students and by the teacher?
 12. What is the student's level of media literacy?
 13. Why do students undertake DE?
 14. What is the correlation between the use of online abstracts and understanding of the school compulsory reading materials?
 15. What is the correlation between the use of simulations and understanding of processes and activities shown in them?
 16. What special needs do students have? Are these needs met?
 17. Does DE allow for participation of persons with visual or hearing impairment?
 18. What learner's behaviour patterns and learning styles do students present?
 19. What information is shared by participants of DE?
 20. What is DE participants' perception of reality?
 21. Do students utilise video lectures, podcasts, chats, forums, interactive visualisations?
 22. What are learning styles of students participating in DE?
 23. How do automatic feedback answers incorporated in quizzes relate to mistakes made by students?
 24. Are students referred to supplementary material?
 25. Are criteria of assessments followed? Does every student have an access to their marking results?
 26. What kind of support do students undertaking DE courses require?
 27. What is the scale of educational failure and dropouts in DE? (Słomczyński and Sidor 2012) What is the scale of educational failure and dropouts in similar / comparative forms of traditional teaching?
- D. How does the **design**, construction of learning content and communication correlate with the age, gender, social and cultural background of users?
1. What is the impact of the aesthetics of the course / course site?
 2. Do the tasks performed capture the imagination of users? If yes, how?
 3. What meaning do users ascribe to the available educational content?
 4. What motivates students undertaking DE? What influences their motivations?
 5. Is the course coherent?

6. Is design / architecture of the information deliberately planned and effective?
7. What image of academic disciplines is contained in the iconography of a DE course / educational site?

6.3.3. Summary table relating to micro level

In the below table, examples of research disciplines and examples of research methods were assigned to examples of research topics on the micro level.

Table 3.

Themes, research fields and test methods for DE on micro level

Research themes	Research disciplines	Examples of research methods
Resources	<i>Business administration, economics, ethics, informatics, informatology, media studies</i>	<i>Analysis of documents, case study, comparative analysis, content analysis</i>
Teaching	<i>Educational technology, ethics, linguistics, science education</i>	<i>Action research, analysis of documents, case study, content analysis, critical discourse analysis methods, exploration, interview, journaling, observation, narrative research, questionnaire</i>
Learning	<i>Computer science, education, ethics, linguistics, psychology, science education</i>	<i>Action research, biographical method, case study, cohort studies, critical discourse analysis methods, critical incidents, diagnostic survey, document analysis, educational experiment, focus group, interview, narrative research, observation, questionnaire, trend studies</i>
Instructional design	<i>Electrical and electronic engineering, informatics, science education, educational technology, education, psychology</i>	<i>Case study (ethnographic research), content analysis, document analysis, observation</i>

Source: Own work

It follows that the micro level includes often a single phenomenon, therefore here may be used qualitative research.

CONCLUSION: THE NEED OF NEW THEORIES ON THE BASIS OF EXISTING KNOWLEDGE

Using existing western theories confirms what we already know (Domańska 2010 a: 51) and hinders build native theory. However, in the field of humanities Polish researchers are reluctant to construct new theories associated with ideologies, because until recently in post-communist Poland research directives were rooted in Marxist ideology as a way of confirming its ongoing existence (Domańska 2010 b: 65, 74).

The research on DE derived from interpretative, not positivist and objective tradition, is in similar situation as the reaserch of humanities which *needs methodology resulting from in-depth analysis of the research material* (Domańska 2010 a: 50). *Action research* and the *grounded theory* (Glaser and Strauss, 1967) which proposes building theories adequate to the research material seems to be the tools useful for the reasearching and understanding DE.

In order to study DE in Poland, however, new theories created on the basis of *case studies, comparative analysis, content analysis* conducted on the basis of existing knowledge are needed. Such studies bring the theory closer to practice, take into account the specificity of the researched subject and give the opportunity to develop theories adequate to the current cultural context.

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