Relationships among Civil Engineering Students' Approaches to Learning, Perceptions of the Teaching-Learning Environment, and Study Success

This study examines the relationship among civil engineering students' approaches to learning, their perceptions of the teaching-learning environment, and their study success. The aim was to identify civil engineering students' approaches to learning and how their approaches to learning are related to their perceptions of the teaching-learning environment and their study success. The data of the study consist of the students' answers to a questionnaire (n=215) and their study success data (n=204), which were gathered from their university's study register. The study success data consist of the cumulative study credits and weighted averages of their course grades. The students were classified into four clusters according to their approaches to learning. Differences in their perceptions of the teaching-learning environment and study success between the clusters were statistically significant. Students who belonged to clusters that emphasized the deep approach to learning experienced their teaching-learning environment more positively than did other students. Students who belonged to clusters emphasizing organized studying earned more credits and higher marks in their studies than did other students.

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Organisations: Research group: Construction Management, Industrial and Information Management, University of Helsinki
Authors: Salmisto, A., Postareff, L., Nokelainen, P.
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Scopus rating (2010): SJR 0.771 SNIP 1.125
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Scopus rating (2007): SJR 0.488 SNIP 0.931
Scopus rating (2006): SJR 0.309 SNIP 0.719
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Scopus rating (2003): SJR 0.457 SNIP 1.579
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ASJC Scopus subject areas: Civil and Structural Engineering, Industrial relations, Strategy and Management
Keywords: Approaches to learning, Engineering education, Study success, Teaching-learning environment
DOIs: 10.1061/(ASCE)EI.1943-5541.0000343
Source: Scopus
Source-ID: 85023205638
Research output: Scientific - peer-review › Article

Pedagogical Content Knowledge in Product Development Education
Engineering education at university faces challenge concerning the efficiency in producing results in learning. Engineering Education will be exposed to globalisation resulting in tough competition between the service providers and individual contributors. This study focuses on capturing and discussing teachers' pedagogical content knowledge on product development education. Currently there are no holistic approaches presented from teacher knowledge viewpoint. The next steps how to develop this knowledge of product development teaching further by focusing on the continuous learning
Informaatiolukutaidon uudet kehykset tiedonhankintataitojen opetuksessa TTY:lä

Survey of health informatics education in Finland in 2017
The European Union and the USA collaborate in developing the skills of the application of information technology in the health care workforce. A part of this activity is a project which studies the gaps in the present education and proposes methods of filling these gaps. The objective of this paper is to identify the existing IT related education to the health care workforce in Finland. A secondary objective was to get an impression of the experience and attitudes of the members of this workforce about health IT education.

This paper presents the results of the survey of how information technology is educated to the students of the health care professions in Finland in the year 2017. In addition to literature search including also the study guides of many major health care professional education organizations, 24 telephone interviews of health care professionals in different fields in Finland were made.

The results show that although basic information technology education is often available at every level of education, it is expected that the health care professionals learn to use the health information systems during their training periods or later in working life. The interviews showed that the given education varied considerably and some of the personnel had received no or only a little education on IT during studies. As the amount and quality of on-the-job information technology education varies, many health care professionals are not able to fully benefit from the information systems if their general feeling is that they just "survive" from daily activities with them.
General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Information Management and Logistics, Research group: Novi
Authors: Nisula, K., Pekkola, S.
Publication date: 10 Dec 2016

Host publication information
Title of host publication: AIS SIGED 2016 Conference on IS education and Research. : Dublin, Ireland, December 10-11, 2016
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Links:
http://cis2016.aisnet.org/ais-siged-international-conference-education-research/
Research output: Scientific - peer-review › Conference contribution

How to develop a new innovation education tool: case of impact canvas

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Industrial Management, Research group: Center for Innovation and Technology Research, Innovation Services, Research Services, University of Tampere
Authors: Aarikka-Stenroos, L., Boedeker, S., Köppä, L., Langwaldt, J.
Publication date: Dec 2016

Host publication information
Title of host publication: In the Proceedings of ISPIM Innovation Summit. The International Society for Professional Innovation Management (ISPIM). : 4-7 December 2016, Kuala Lumpur, Malaysia.
Links:
http://summit.ispim.org/
Research output: Scientific - peer-review › Conference contribution

Affective experiences and student engagement in higher education

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Information Management and Logistics, Research group: Novi, Language Centre, Managing digital industrial transformation (mDIT)
Authors: Helander, N., Boedeker, M., Hellsten, P., Jussila, J., Myllärniemi, J., Tukiainen, M.
Publication date: 13 Sep 2016

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ASJC Scopus subject areas: Education
Links:
Research output: Scientific - peer-review › Conference contribution

Integrating mobile orienteering to team forming activity in a software engineering course

One of the most important skills software engineers need when entering work life is working in teams, including communicating, collaborating, as well as coordinating work in a team. This paper presents a team building activity aiming to support the first phases of team formation with a mobile orienteering activity. Created tasks at orienteering checkpoints were related to communication, collaboration and work division. Students were enthusiastic about the activity and expressed in their group reports on the activity that it supported the team building activity well, helped break the ice and
supported agreeing the ways of working. Students also liked getting out of the classroom. The approach seems promising and we will investigate in the future similar type of activities in the first phases of team formation as well as will explore further integrating physical activity to the exercise sessions.

How to facilitate freshmen learning and support their transition to a university study environment

ABSTRACT
Most freshmen enter universities with high expectations and with good motivation, but too many are driven into performing instead of true learning. The issues are not only related to the challenge of comprehending the substance, social and other factors have an impact as well. All these multifaceted needs should be accounted for to facilitate student learning. Learning is an individual process and remarkable improvement in the learning practices is possible, if proper actions are addressed early enough. We motivate and describe a study of the experience obtained from a set of tailor-made courses that were given alongside standard curriculum. The courses aimed to provide a "safe community" to address the multifaceted needs. Such support was integrated into regular coursework where active learning techniques, e.g. interactive small groups were incorporated. To assess impact of the courses we employ the feedback obtained during the courses and longitudinal statistical data about students' success.
I feel great - university students affective experiences on learning and teaching

According to Kolb [1], experience is the source of learning and development. This is a statement that serves as the starting point of this study. We argue that the role of affective experiences cannot be overlooked when evaluating university learning and teaching. In the present paper, we will study students’ affective experiences in higher education setting, specifically in engineering education in a technological university. The perceived affective experiences are empirically analysed through a mystery shopper data set, which was gathered in the case university by a group of students. The study bases theoretically on affective experiences framework, more familiar from the consumer behaviour research stream. The aim of the study is to analyse what kinds of affective experiences students recognise when studying in a technical university and further to elaborate, how these affective experiences could be used to increase student engagement and the students’ motivation to learn. The study provides an innovative approach to university learning and teaching by applying mystery shopper method and affective experience approach from more business-oriented disciplines. The contribution to education science is the increased understanding of the role of affective experience in learning.
Self-regulation and competence in work-based learning

This chapter discusses the connection between self-regulation and competence in both formal and informal contexts of vocational and professional education. The goal is to show that self-regulation has a theoretical linkage to a multifaceted and holistic approach to competence and that self-regulatory abilities play a role in the development of vocational competence. Different theoretical approaches to self-regulation and competence and the link between the two concepts are discussed. We argue that self-regulation plays an important role in the development of competence, as it is needed to acquire competencies, unified sets of knowledge, skills and views. Self-regulation acts as an indirect factor between competencies and direct formal, non-formal and informal learning processes (e.g. vocational studies, leisure time activities and work) aimed to develop them. In this chapter, we present results of empirical studies on self-regulation and competence to support this argumentation. Several studies with vocational skills competition competitors show that strong self-regulatory abilities are related to successful competition performances. Also results from a study with Finnish in-service air traffic controllers indicate a link between vocational excellence and self-regulative action. Our conclusion is that self-regulatory skills should be taught in addition to the vocation-specific skills in competence-based vocational and professional education.
STACK assignments in university mathematics education

Students' learning process can be assisted and diversified with the help of e-learning tools and virtual environments. In Tampere University of Technology, the aim is to utilize software that delivers assignments, checks students' answers and gives feedback to the students, in the mathematics courses. The software that has been used is called STACK, which can be integrated into Moodle. STACK assignments have been created as a part of the STEM education material bank Abacus.

Written feedback can be generated in STACK assignments as necessary. Feedback guides the students to identify their errors and revise them. It can also motivate the students to try again after giving a wrong answer.

This study concerns the use of STACK in TUT mathematics courses. Especially we are interested in:
- how do the points gathered and the time of the last submission in STACK exercises correlate with the exam grades?
- when and for how long do the students solve the STACK assignments?
- how does the activity in STACK differ between honours and engineering mathematics students?

In STACK assignments, the students were able to give their answers in Moodle. For each lecture week, they had one week to solve and return the answers. All the student activity related to the STACK assignments was saved in the Moodle logs. Data was analysed with Matlab by the means of educational data mining.

We observed that the activity in STACK was the greatest near the deadline. We also found that, on average, the better the grade, the earlier the students gave their final answers in STACK. Additionally, the honours mathematics students made their submissions earlier: many of them considered STACK exercises as a good way to revise the subjects considered in the lectures, while engineering mathematics students mostly rehearsed with STACK near the deadline.

According to the survey polls, students found the STACK exercises as a nice and efficient way to rehearse and learn mathematics. Especially, the instant feedback was mostly appreciated. However, some of the students felt writing the answers with a computer unappealing, but generally this aspect was not considered a problem.

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Mathematics, Research group: MAT Positioning
Authors: Mäkelä, A., Ali-Löytty, S., Humaloja, J., Joutsenlahti, J., Kauhanen, J., Kaarakka, T.
Number of pages: 14
Publication date: 2016

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Title of host publication: Proceedings of the 44th SEFI Conference, 12 - 15 September 2016, Tampere, Finland
Publisher: European Society for Engineering Education SEFI
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Keywords: STACK, web-assisted learning tools
ASJC Scopus subject areas: Education
Links:
Research output: Scientific - peer-review › Conference contribution

Utilizing electronic exams in programming courses: a case study

A great number of university students' work during their studies, leading to problems with the scheduling of courses and examinations. One way to solve the problem related to exams is to utilize electronic tests, which allow flexible timetables and video-based control against cheating. In Finland, a consortium of 20 universities is using a recently developed electronic examination system called Exam. The system supports essay and multiple choice examinations in particular. In this study, we experiment with the Exam system in computer programming tests. The outcome of the study is discussed from both the students' and teachers' perspectives.

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Virtual Reality Situational Language Trainer for Second Language: Design & Evaluation

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: University of Tampere
Authors: Korkalainen, T., Pääkylä, J., Liukkonen, T. N., Järvenpää, L., Mäkilä, T., Lappalainen, Y., Kamppari, H.
Publication date: 2 Dec 2015

Host publication information
Title of host publication: GAMEON' 2015. 16th International Conference on Intelligent Games and Simulation
Editors: Bakkes, S., Nack, F.
Research output: Scientific - peer-review › Conference contribution

MYSTERY SHOPPERS RECOGNISING KNOWLEDGE SHARING BARRIERS IN HIGHER EDUCATION

This study focuses on the knowledge sharing barriers in the space between learning and teaching in higher education as reported by mystery shoppers. There is surprisingly little context-specific research on learning and teaching in a knowledge intensive community like a university from the perspective of knowledge management (KM). Discussing learning and teaching within KM is based on considering students controversially as customers or stakeholders. Thus including them more meaningfully in assessing and developing teaching practices, or knowledge flow, seems justified. The specific aim of this paper is to first recognise possible knowledge sharing barriers and then categorize such barriers emerging from the material into three larger domains, namely, individual barriers, technological barriers and organisational barriers.

There were 45 students from all faculties participating in a mystery shopper project in a Finnish university of technology. They observed their learning experience for six weeks in order to supplement data from other sources, to add a student voice on the process of developing learning and teaching in higher education.

The research approach represents qualitative content analysis in which knowledge-sharing barriers were recognised from the qualitative mystery shopper data. The results identify teaching practices that contribute to creating knowledge sharing barriers. More detailed and almost real-time contextual activity sampling is suggested as a method for further study and also an avenue for instant feedback for teaching staff. The results will provide data on current knowledge practices and learning processes in a technical university in Finland.

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Language Centre, Department of Information Management and Logistics, Research group: Novi, University of Tampere
Authors: Tukiainen, M., Helander, N., Mäkinen, M.
Publication date: 16 Nov 2015

Host publication information
A Barrier framework for open e-learning in public administrations

E-Learning and openness in education are receiving ever increasing attention in businesses as well as in academia. However, these practices have only to a small extent been introduced in public administrations. The study addresses this gap by presenting a literature review on Open Educational Resources (OER) and E-Learning in the public sector. The main goal of the article is to identify challenges to open E-Learning in public administrations. Experiences will be conceptualized as barriers which need to be considered when introducing open E-Learning systems and programs in administrations. The main outcome is a systematic review of lessons learned, presented as a contextualized Barrier Framework which is suitable to analyze requirements when introducing E-Learning and OER in public administrations.
Finnish Innovations and Technologies in Schools: a Guide towards New Ecosystems of Learning

General information
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Ministry of Education publication type: C2 Edited books
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Number of pages: 175
Publication date: 2 Oct 2014

Publication information
Place of publication: Rotterdam
Publisher: Sense Publishers
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Original language: English
Source: Bibtext
Source-ID: urn:acc503c02a8b1e66660f5e823b95fa02
Research output: Scientific - peer-review › Anthology

Prologue: Towards a Global Ecosystem

General information
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Ministry of Education publication type: A3 Part of a book or another research book
Organisations: University of Helsinki
Authors: Niemi, H., Multisilta, J., Lipponen, L., Vivitsou, M.
Pages: ix-xii
Publication date: 2 Oct 2014

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Editors: Niemi, H., Multisilta, J., Lipponen, L., Vivitsou, M.
ISBN (Print): 978-94-6209-747-6
Source: Bibtext
Source-ID: urn:428e026a42270240fd84f5f1f0240c03f
Research output: Scientific - peer-review › Chapter

Matka AVOmerelle: Avoimuutta ja verkostomaista toimintakulttuuria tutkimassa

General information
State: Published
Ministry of Education publication type: D4 Published development or research report or study
Organisations: University of Tampere
Authors: Lappalainen, Y.
Number of pages: 104
Publication date: 31 Mar 2014

Publication information
Publisher: University of Tampere
ISBN (Print): 978-952-6669-02-1
ISBN (Electronic): 978-952-6669-03-8
Original language: Finnish
Links:
http://wiki.eoppimiskeskus.fi/display/AVOkoulutukset/Matka+AVOmerelle+-+avoimuutta+ja+verkostomaista+toimintakulttuuria+tutkimassa
Angry Birds for Fun in Learning

General information
State: Published
Ministry of Education publication type: A3 Part of a book or another research book
Organisations: University of Helsinki
Authors: Harju, V., Multisilta, J.
Number of pages: 8
Pages: 69-76
Publication date: 2014

Host publication information
Title of host publication: Finnish Innovations and Technologies in Schools: a Guide towards New Ecosystems of Learning
Publisher: Sense Publishers
Editors: Niemi, H., Multisilta, J., Lipponen, L., Vivitsou, M.
ISBN (Print): 978-94-6209-747-6
Source: Bibtex
Source-ID: urn:065aa8172889a9755c90a3e8fa4fcbd2
Research output: Scientific - peer-review › Chapter

Avoimuus oppimisverkostossa

General information
State: Published
Ministry of Education publication type: B3 Non-refereed article in conference proceedings
Organisations: University of Tampere
Authors: Lappalainen, Y., Sihvonen, M.
Pages: 37-43
Publication date: 2014

Host publication information
Title of host publication: Tuovi 12: Interaktiivinen tekniikka koulutuksessa 2014-konferenssin tutkijatapaamisen artikkelit
Publisher: University of Tampere
Editors: Viteli, J., Östman, A.
ISBN (Electronic): 978-951-44-9561-8
Publication series
Name: TRIM Research Reports
No.: 12
ISSN (Electronic): 1799-2141
Links:
Research output: Scientific › Conference contribution

Children as co-creators of video stories: mobile videos for learning

General information
State: Published
Ministry of Education publication type: A3 Part of a book or another research book
Organisations: Regulation of learning and active learning methods (REALMEE), University of Helsinki
Authors: Multisilta, J., Niemi, H.
Pages: 588-592
Publication date: 2014

Host publication information
Title of host publication: 2014 37th International Convention on Information and Communication Technology, Electronics and Microelectronics (MIPRO)
Source: Bibtex
Source-ID: urn:3cae9f1d4bb2c72aca7cc513991df35e
Research output: Scientific - peer-review › Chapter
Content and Language Integration as a part of a degree reform at Tampere University of Technology

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Language Centre
Authors: Niemelä, N., Jauni, H.
Number of pages: 15
Pages: 39-53
Publication date: 2014

Host publication information
Title of host publication: HEPCLIL, Higher Education Perspectives on CLIL, University of Vic - Central University of Catalonia, VIC, 27 and 28 March 2014
ISBN (Print): 978-84-941644-9-1
Links:
http://mon.uvic.cat/hepclil

Bibliographical note
HEPCLIL (Higher Education Perspectives on Content and Language Integrated Learning)<br>Contribution: organisation=kie,FACT1=1<br>Portfolio EDEND: 2014-12-30
Source: researchoutputwizard
Source-ID: 1132
Research output: Scientific - peer-review › Conference contribution

Digital Storytelling for 21st-Century Skills in Virtual Learning Environments
This article finds that the new virtual learning environments comprise more spaces and practices in which digital resources, tools, and applications are used. The article introduces how digital storytelling can create virtual learning environments when it is used for learning 21st-century skills and competencies needed in students’ future working life. The study describes how students (n = 319) in three countries and their teachers (n = 28) value digital storytelling and what they think students have learned. Their experiences are analyzed using a theoretical conceptualization of the global sharing pedagogy that sets categories of processes or tools as mediators: 1) learner-driven knowledge and skills creation, 2) collaboration, 3) networking, and 4) digital literacy. Analyses have been quantitative and qualitative. The article describes students’ experiences when they created their digital stories and how they engaged in learning. The major findings are that students enjoyed creating their stories, and they were very engaged in their work. They learned many 21st-century skills when creating their digital stories.

General information
State: Published
Ministry of Education publication type: A1 Journal article-refereed
Organisations: University of Helsinki

Digitaisen tarinankerronnan monet mahdollisuudet

General information
State: Published
Ministry of Education publication type: A3 Part of a book or another research book
Organisations: University of Helsinki
Authors: Viitanen, K., Harju, V., Niemi, H., Multisilta, J.
Number of pages: 25
Pages: 187-211
Publication date: 2014

Host publication information
Title of host publication: Rajaton luokkahuone
Place of publication: Jyväskylä
Publisher: PS-kustannus
Editors: Niemi, H., Multisilta, J.
ISBN (Print): 978-952-451-618-1

Publication series
Name: Opetus 2000
Source: Bibtex
Source-ID: urn:8ebf2ec34e0f186ec90ce07069060bf6
Research output: Scientific - peer-review › Chapter
Language Learning in Task Management and Task Accomplishment In Higher Education Perspectives on Content and Language Integrated Learning

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Language Centre
Authors: Jauni, H., Niemelä, N.
Number of pages: 11
Pages: 183-203
Publication date: 2014

Host publication information
Title of host publication: HEPCLIL, Higher Education Perspectives on CLIL, University of Vic - Central University of Catalonia, VIC, 27 and 28 March 2014
ISBN (Print): 978-84-941644-9-1
Links:
http://mon.uvic.cat/hepclil

Bibliographical note
HEPCLIL (Higher Education Perspectives on Content and Language Integrated Learning)<br/>Contribution: organisation=kie,FACT1=1<br/>Portfolio EDEND: 2014-12-30
Source: researchoutputwizard
Source-ID: 592
Research output: Scientific - peer-review › Conference contribution

Leikilliset oppimateriaalit innostavat oppimaan

General information
State: Published
Ministry of Education publication type: A3 Part of a book or another research book
Organisations: University of Helsinki
Authors: Harju, V., Multisilta, J.
Number of pages: 15
Pages: 270-284
Publication date: 2014

Host publication information
Title of host publication: Rajaton luokkahuone
Place of publication: Jyväskylä
Publisher: PS-kustannus
Editors: Niemi, H., Multisilta, J.
ISBN (Print): 978-952-451-618-1

Publication series
Name: Opetus 2000
Source: Bibtex
Source-ID: urn:d30c0cd7fa0fca27885cc0eb957cad66
Research output: Scientific - peer-review › Chapter

Leikkien mutta tosissaan: Leikillä iloa oppimisympäristöön

General information
State: Published
Ministry of Education publication type: A3 Part of a book or another research book
Organisations: University of Helsinki
Authors: Harju, V., Multisilta, J.
Number of pages: 15
Videot nuorten maailmassa ja digitaalinen tarinankerronta

General information
State: Published
Ministry of Education publication type: A3 Part of a book or another research book
Organisations: University of Helsinki
Authors: Multisilta, J., Niemi, H.
Number of pages: 13
Pages: 174-186
Publication date: 2014

Host publication information
Title of host publication: Rajaton luokkahuone
Place of publication: Jyväskylä
Publisher: PS-kustannus
Editors: Niemi, H., Multisilta, J.
ISBN (Print): 978-952-451-618-1

Publication series
Name: Opetus 2000
Source: Bibtex
Source-ID: urn:1a344dde35cea1b14e743ec3541837a6
Research output: Scientific - peer-review › Chapter

Oppilaiden tuottamien videoiden käyttö opetuksessa

General information
State: Published
Ministry of Education publication type: B2 Part of a book or another research book
Organisations: University of Helsinki
Authors: Multisilta, J., Niemi, H.
Number of pages: 12
Pages: 66-77
Publication date: 2013

Host publication information
Title of host publication: Uusi oppiminen
Publisher: Eduskunta
ISBN (Print): 978-951-53-3521-0

Publication series
Name: Eduskunnan tulevaisuusvaliokunnan julkaisu
No.: 8/2013
Source: Bibtex
Source-ID: urn:55d626fdcafeb68a9f7bec1f2f9e7aa5
Research output: Scientific › Chapter
Designing Learning Ecosystems for Mobile Social Media

Social media has gained interest not only in entertainment applications, but also with learning and business applications; however, there are not many research frameworks available for designing learning activities for learning ecosystems based on mobile social media. In this chapter, a framework for designing and analyzing learning activities in learning ecosystems that are based on mobile and social media is presented. The framework is based on Activity Theory (AT) and Experiential Learning Theory (ELT). In the chapter the existing research on e-learning, mobile learning, and multimodal learning are discussed and reviewed. The research on learning ecosystems based on mobile social media is also positioned to this multi-scientific research field. Finally, two examples of using the framework for designing, learning, and analyzing learning activities in mobile social media learning ecosystems are presented.

General information
State: Published
Ministry of Education publication type: A3 Part of a book or another research book
Organisations: University of Helsinki
Authors: Multisilta, J.
Number of pages: 22
Pages: 270-291
Publication date: 2012

Host publication information
Title of host publication: Informed Design of Educational Technologies in Higher Education
Publisher: IGI Global
Editors: Olofsson, A. D., Lindberg, J. O.
ISBN (Print): 978-1-61350-080-4
Keywords: 516 Educational sciences, 113 Computer and information sciences
DOIs: 10.4018/978-1-61350-080-4.ch014
Source: Bibtex
Source-ID: urn:c8c180952ad8e571998c50a8def29d00
Research output: Scientific - peer-review › Chapter

On Actor-Network Theory and Learning Ecosystems based on Mobile Social Media

In this paper we will define learning ecosystems based on social media and try to describe the learning process in these environments using Actor-Network Theory. Especially, we are interested in the question of how an ad-hoc group of learners could be understood as an actor-network in ANT. We claim, that the availability of social media does not guarantee that the actors in the social media system form the actor-network. However, it would be important to know under which conditions the actor-network is formed and what kind of quality we get from the actor-networks. Finally, we conclude that pedagogically meaningful and high-quality learning ecosystems based on mobile social media can be described as actor-networks.

General information
State: Published