Stockholm University

Study guide

Early Childhood Education: Focusing Mathematics and technology

12 credits, Full time studies

Course code: UB314F

Autumn semester, 2018

November 16 – January 18

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Welcome!

Hello everyone and a big welcome to the course, "Early Childhood Education: Focusing Mathematics and Technology". In this study guide, you will find information about the course, course literature along with other details of a practical nature.

All courses at the Department of Child and Youth Studies have their own course website, where you will find all the information you need regarding the course; as e.g. the course syllabus, schedule, course literature and study guide. You can find the course web site here: www.buv.su.se/UB314F

This course will also be using Stockholm University's common digital collaboration and learning environment MONDO https://mondo.su.se/portal as a means of collective communication. On registering onto the course, you will be able to log onto the Mondo course site with your university username and password, browsing for the course code.

The course is a **full-time course** for **eight weeks** of study **between November 16 2018 and January 18 2019.** The course is taught by a team of lecturers: Karin Hultman, Bibi Cederloo and Emelie Moberg (Department of Child and Youth Studies -BUV), Linda Öhlund (Department of Mathematics and Science Education - MND) and Julia Almqvist **(**Department of Humanities and Social Sciences Education – HSD) and Andrew Doyle (Department of Learning in Engineering Sciences at KTH Royal Institute of Technology).

Literature

The course literature is listed on the course website, and in the end of this Study Guide. In addition recommended reading before lectures is presented in a document at mondo in the beginning of the course.

The reference system used in the course follows the Harvard system.

Information and guide in English language: Please follow the manual for the Harvard reference system available at Umeå University Library homepage

Information and guide in Swedish language:
I denna kurs används Harvardsystemet för referenshantering. Följ Borås-guidens hänvisningar. I guiden står att praxis när det gäller sidor i texthänvisningen varierar inom olika ämnesområden. För kurser inom Förskollärarprogrammet gäller att både citat och referat anges med sidhänvisning. I alla skriftliga examinationer inom Förskollärarprogrammet är kravet att referenshanteringen ska vara i huvudsak korrekt för att uppnå godkänt betyg.

Klicka här för att hämta Borås-guiden (du finner Borås-guiden under rubriken "Referensguide vid Avdelningen för förskollärarutbildning och förskoleforskning (FUFF)")

Additional information

Other important information about being a student at Stockholm can be found at the following web site: http://www.su.se/english

You will find the short guide **A Smooth Start** for international and exchange students here: http://www.su.se/english/study/admitted-students/a-smooth-start-1.157668

We advise you to take some time to **read the International Handbook,** especially pages 17-28, about rules, regulations and services for you as a student at Stockholm University: http://www.su.se/english/study/student-services/handbook-for-international-and-exchange-students-1.1627

Evaluation

Students are invited to participate in discussions about the course and are free to bring up suggestions for changes during the course. An on-line evaluation form will be distributed to all students at the end of the course.

Early Childhood Education: Focusing Mathematics and Technology

Course content

This course introduces the field of mathematics. It covers both children's and the students' own relationship to mathematics, as well as mathematical learning theories related to gender. The course considers children's mathematical activities and exploration in their daily lives. In the course, mathematics is treated as a language and studied using practical-aesthetic and multimodal forms of expression. The course will also introduce technology.

The use of pedagogical documentation is extended as a tool to monitor and challenge learning processes, as well as to reflect on the students' own pedagogical actions. The course content is consistently discussed in relation to the task of a preschool teacher and the objectives of the curriculum:

- the importance of play for children's use of mathematics;
- how children create meaning from the study of signs and symbols;
- various practical-aesthetic approaches that stimulate mathematics;
- stimulate and challenge children's interest in technology;
- listening and conversation as didactic tools.

Course structure

Examination code	Name
MOM1	Basic mathematics and technology, 1 credit
MOM2	Teaching math in the everyday technology, 2 credits
MOM3	Mathematics: learning theories and theories of knowledge, 2 credits
MOM4	Mathematics – explorative work and teaching, 7 credits

Course module *Basic mathematics and technology in preschool, 1 credit*
The module aims for the student to, through course literature and through their own exploration in workshops, seminars and lectures learn how children's play and exploration of signs, symbols, and other expressions carry meaning for mathematical and technical learning.

Course module *Teaching mathematics in the everyday life in preschool, 2 credits*
The module aims for the student to acquire knowledge of practical and aesthetic learning processes; to show knowledge of elementary mathematical learning; and to use practical-aesthetic forms of expression and play in the planning of activities that stimulate mathematical learning.

Course module *Mathematics, learning theories and theories of knowledge, 2 credits*
The module aims for the student to be able to describe, compare, and relate different theories to mathematical learning and to relate them to the preschool's policy documents.

Course module Mathematics - explorative work and teaching, 7 credits

The module aims for the student to acquire knowledge of the basics of the mathematical concepts of space, form, position, and direction; the basic properties of quantities, amounts, orders, and number concepts, as well as the basics of measurement, time and change; to provide knowledge on how to use pedagogical documentation as a tool to monitor mathematical learning processes; how to reflect on one's own relationship to mathematics and to reflect on mathematical learning theories related to gender

Learning outcomes

In order to pass the course module ***Basic mathematics and technology in preschool****, 1 credit* students are expected to be able to:

- based on the literature and their own studies in workshops, create an understanding of in what ways children's play and exploration of signs, symbols and other expressions affect mathematical learning.

In order to pass the course module ***Teaching mathematics in the everyday life in preschool****, 2 credits* students are expected to be able to:

- use practical-aesthetic and multimodal forms of expression;

-show elementary knowledge about preschool children's mathematical learning;
- use practical-aesthetic and multimodal forms of expression, games and ICT in the planning of activities to stimulate mathematics;

In order to pass the course module ***Mathematics, learning theories and theories of knowledge****, 2 credits* students are expected to be able to

- describe and compare different theories of mathematical learning and relate these to the preschool's policy documents;

In order to pass the course module *Mathematics* - ***explorative work and teaching****, 7 credits* students are expected to be able to:

- be familiar with the basics of the mathematical concepts of space, form, position and direction, the basic properties of quantities, amounts, orders and number concepts, as well as the basics of measurement, time and change;

- use pedagogical documentation as a tool to monitor mathematical learning processes;
- reflect on their own relationship to mathematics and be able to reflect on

mathematical learning theories related to gender.

Education

Instruction is given in the form of seminars, lectures, workshops/laboratory work, individual assignments and group assignments, as well as via the university's virtual learning environment.

Schedule

There is an **up-dated** schedule on the course web site**:** **www.buv.su.se/UB314F**

Examination dates

- MOM1: Participation in workshops (1 cr).
- MOM2: Group assignment presented at the seminar 4/12 with Karin Hultman (2 cr).
- MOM3: Group assignment (2 cr). Presented at the seminar 6/12 with Karin Hultman**.** After this seminar, each student is required to write an individual text that is due no later than one week after the seminar (13/12). Instructions will be presented at mondo at the beginning of the course.
- MOM4: Individual paper (7 cr) – uploaded on MONDO in the assignment folder not later than January 18 23.59.

The examinations are presented in a compendium that you will find at MONDO in the resources folder when the course starts. **Important: all written assignments are to be uploaded on MONDO. We cannot accept texts sent by email.**

Attendance requirements

All workshops, seminars and lectures are mandatory. Should you not be able to participate you are to write a make-up assignment. Instructions for the make- up assignments will be available at the Mondo page at the start of the course.

Should you not be able to participate in the *examination* seminar (4/12 and 6/12) hosted by Karin Hultman you must contact Karin Hultman.

The make- up assignment(s) are to be uploaded on MONDO in the folder called make-up assignments no later than January 18, 23.55.

Plagiarism and regulations for disciplinary matters

As a student you have to be conscientious about clearly accounting for the material used in the texts that are submitted for examination. To use other people's expressions or ideas without stating where they are from is plagiarism. To translate and/or change some words in someone else's text and present it as one's own is obviously also a form of plagiarism. The teachers in the course may use the web-based tool Urkund to check your text for plagiarism.

Plagiarism is considered to be cheating and if discovered in an exam or paper, the exam or paper will immediately be failed and disciplinary measures may be taken. Any student who is caught cheating or disrupting academic activities can be suspended from

lectures and exams for a period of up to six months. The Vice-Chancellor or the Disciplinary Council decides whether the student is to be subject to any disciplinary measures.

Grade for the whole course

To get a grade for the whole course, all examinations must be finished with at least the grades G or E. The grade for the whole course is based on the grade of MOM4

Re-examination and Fail

A student who has received a grade of E or higher may not take a re-examination for a higher grade. In addition, a registered passing grade may not be altered to Fail.

A student who receives the grade Fx once has the possibility of complementing the exam within two weeks after receiving the grade. If improvements are not done in the time allotted, the student is required to retake the examination.

A student who has received the grade of F, Fx or U twice on a given examination and by the same examiner may apply and be granted a new examiner. The application should be addressed to the director of studies.

The next opportunity for re-examination of MOM4 will take place during the time period February 11 until March 5th 23.55. Students who want to re-take the examination shall contact the course administrator at the latest February 26. The assignment will be the same and will be handed in on the Mondo page.

If you have make-up assignment(s) for missed seminars or workshops that have not been handed in according to the deadline you can also hand in these make-up assignments during the re-examination period. Please see instructions for make-up assignments on the Mondo page.

Course Literature

Baroody, A J., Lai, M-L. & Mix, K S. (2006). "The development of young children's early number and operation sense and its implications for early childhood education", In Spodek B. & Sacharo O N. (eds.) *Handbook of Research on the Education of Young Children,* Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers, 2nd ed., pp. 187- 221. (34 p.)*

Carruthers, E. & Worthington, M. (2006). *Children's Mathematics: Making Marks, Making Meaning*. London: Sage publications, 2nd ed. (280 p.)

Castagnetti, M. & Vecchi, V. (eds.) (1997). *Shoe and Meter. Children and Measurement: first approaches to the discovery, function and use of measurement.* Reggio Emilia: Reggio Children. (103 p.) *

Clements, D H. & Sarama, J. (2009). *Learning and Teaching Early Math: The Learning Trajectories Approach.* New York and Abingdon: Routledge. (394 p.)

Cross, C T., Woods, T A. & Schweingruber, H. (eds.) (2009). *Mathematics Learning in Early Childhood: Paths Toward Excellence and Equity.* Washington: National Academies Press. (398 p.)*

Franzén, K. (2015). Under threes' mathematical learning**.** *European Early Childhood Education Research Journa*l, 23(1), pp. 43-54. (12 p.)*

Franzén, K. (2015). Being a tour guide or travel companion on the children's knowledge journey. *Early Child Development and Care,* 185(11-12), pp. 1928-1943. (16 p.)*

Palmer, A. (2010). 'Let's Dance!' Theorising Alternative Mathematical Practices in Early Childhood Teacher Education. *Contemporary Issues in Early Childhood,* 11(2), ss. 130- 143. (13 p.)*

Palmer, Anna (2009). 'I'm not a "maths-person"!' Reconstituting mathematical subjectivities in aesthetic teaching practices. *Gender and Education*, 21(4), ss. 387-404. (13 p.)*

Additional course literature such as articles, reports etc. as assigned by the teacher (approximately 150 pages).

* Available online

Tuesday, 23 October 2018