

Application for doctoral position

1. Doctoral programme: Educational Sciences (227643)
2. Title of project in Estonian: Loodusnähtustel põhinevate teadusetenduste väljatöötamine soodustamaks õpilaste kognitiivset ja afektiivset arusaamist loodusteadustest
3. Title of project in English: Developing justified phenomena-based science shows promoting students' cognitive and affective science development
4. CERCS research specialisation: S270 (Pedagogy and didactics), P400 (Physical Chemistry)
5. Responsible Supervisor

| First name | Last name | Structural unit | Position |
|------------|-----------|------------------------|----------|
| Heili | Kasuk | Institute of Chemistry | lecturer |

Supervisor

| First name | Last name | Structural unit | Position |
|------------|-----------|------------------------------|--------------------|
| Jack | Holbrook | Centre for Science Education | visiting professor |

6. Summary in Estonian

Title: Loodusnähtustel põhinevate teadusetenduste väljatöötamine soodustamaks õpilaste kognitiivset ja afektiivset arusaamist loodusteadustest

Supervisors: Heili Kasuk, Jack Holbrook

Uurimisprojekti keskmes on teadusetenduste mõju uurimine õpilaste hoiakutele ja huvi äratamisele loodusteaduste vastu. Projekti käigus uuritakse teadusetenduste interaktiivseid ja kaasavaid esitlusviise ning analüüsitakse teadusetenduste lühi- ja pikaajalisi mõjusid õpilaste loodusteaduslikule kirjaoskusele ja karjäärivalikutele. Samuti on oluline välja selgitada, kuidas teadusetendused mõjutavad õpilaste suhtumist loodusteaduste õppimisse koolis ning toetavad õpilaste kriitilist mõtlemist vastutustundlike otsuste tegemisel. Uuringu sihtrühmaks on 14–16-aastased õpilased, kellelt kogutakse andmeid valideeritud küsimustike ja rühmaintervjuude kaudu. Uurimistöö eesmärk on süvendada arusaamist teadusetendustest tulenevast hariduslikust kasust ja eriti nende mõjust õpilastele. Doktoriprojekti kandidaatidelt oodatakse eesti keele oskust nii kõnes kui ka kirjas.

7. Summary in English

Title: Developing justified phenomena-based science shows promoting students' cognitive and affective science development

Supervisors: Heili Kasuk, Jack Holbrook

The focus of the research project is the investigation of the impact of science shows on student attitudes and interest towards science learning determined in terms of transversal skills related to cognitive, interpersonal and intrapersonal learning. By investigating the effectiveness of instructor presentation approaches in terms of techniques for interactive and thought-provoking demonstrations, the study seeks to uncover short-term and long-term effects on students' scientific literacy gains, especially from the impact derived from experimentation and greater career awareness. Of special interest is seeking to determine how phenomena-based science interactive shows relate to enhancing attitudes towards school science learning and foster students' critical thinking for responsible socio-scientific decision-making. The research methodology involves a longitudinal study through administering validated instruments to students, aged 14-16, complemented by small group interviews. Ultimately, this study aims to enhance understanding of the educational benefits derived from science shows and in particular, their impact on students' interest in pursuing science learning, post grade 9. Doctoral project candidates are expected to have proficiency in spoken and written Estonian.