

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet: UČENJE NARAVOSLOVJA Z RAZISKOVANJEM
Course title: Inquiry Based Science Learning

Vrsta predmeta / Course type

D - Splošni izbirni predmet

Univerzitetna koda predmeta / University course code:

/

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
20	10	0	30	0	60	4

Nosilec predmeta / Lecturer:

prof. dr. Mojca Čepič

Jeziki /

Languages:

Predavanja / Lectures: slovenščina, angleščina

Vaje / Tutorial: slovenščina, angleščina

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:

1. Zaradi načina in narave dela pri predmetu je prisotnost in aktivna udeležba pri vseh kontaktnih oblikah študija obvezna.

Prerequisites:

1. Attendance and active participation of the students at all contact hours is compulsory due to the nature of the subject.

Vsebina:

1. Značilnosti, struktura in posebnosti raziskovalnega pouka naravoslovja.
 2. Organizacija in vodenje pouka naravoslovja, ki omogoča postopno konstrukcijo znanja in razumevanja okolice z lastno aktivnostjo.
 3. Kontrola spremenljivk in pošten poskus.
 4. Razvoj spretnosti in veščin, podobnih tistim, ki jih uporabljajo raziskovalci (zastavljanje vprašanj, eksperimentiranje, merjenje, delo s podatki, sklepanje, argumentiranje in predstavljanje ugotovitev).
 5. Delo bo potekalo na konkretnih zgledih iz obravnave gibanja, lastnosti snovi, svetlobe, temperature, vremena in elektrike.

Content (Syllabus outline):

1. Characteristics, structure and specifics of IBSE (inquiry-based science education).
 2. Organisation and guiding science learning which enables gradual construction of knowledge and understanding of the surroundings with one's own activity.
 3. Control of variables and fair testing.
 4. Development of skills, typical for scientists (question – forming, experimenting, measuring, data management, inferring, argumentation and presenting the findings).
 5. Work will be organised on concrete examples of teaching motion, properties of matter, light, temperature, weather and electricity.

Temeljni literatura in viri / Readings:

1. Harlen, W (ed.) (2001). Primary Science: Taking the plunge. Portsmouth, NH: Heinemann.
 2. Labinowicz E. (1989). Izvirni Piaget. Ljubljana: DZS.
 3. Marjanovič Umek L. (ured.) (2001). Otrok v vrtcu. Priročnik h Kurikulu za vrtce. Maribor: Obzorja.
 4. Interna gradiva iz raziskovalnih delavnic projektov POLLEN in FIBONACCI. Urednica: Ana G Blagotinšek

Cilji in kompetence:

Objectives and competences:

1. Poznavanje vsebine, oblik in metod začetnega naravoslovja.
2. Poznavanje in uporaba teorij o otroštvu, razvoju in učenju.
3. Poznavanje specifičnih postopkov pri raziskovalnem procesu.
4. Uporaba primernih vprašanj za spodbujanje radovednosti in miselnega razvoja otrok.
5. Spremljanje in spodbujanje dosežkov in napredka otrok.
6. Spremljanje in evalvacija lastnega dela.
7. Praktično poznavanje konkretnih primerov poučevanja z raziskovanjem.

1. Knowledge of the content, forms and methods of work in early science education.
2. Knowledge, critical evaluation and application of theories related to childhood, development and learning.
3. Knowledge of the processes specific for research process.
4. To master use of appropriate questions to expand children's interests and promote their cognitive development.
5. Monitoring and recording of achievements, progress and development of children.
6. Monitoring one's own work and critical self-evaluation.
7. Knowledge of concrete examples of inquiry-based teaching.

Predvideni študijski rezultati:

Znanje in razumevanje:

1. pozna materialne pogoje, primerne za izvajanje raziskovalnega pouka;
2. zna prilagoditi način dela razvojni stopnji predšolskega otroka;
3. pozna razvoj postopkov in pojmov;
4. pozna nabor dejavnosti za spodbujanje razvoja miselnih procesov;
5. pozna vsebine s področja narave, primerne za uresničevanje kurikularnih ciljev z raziskovalnim poukom;
6. zna načrtovati, voditi in izvesti (naravoslovno) raziskavo;
7. pozna stadije v miselnem razvoju otroka;
8. razume individualne razlike in jih upošteva pri načrtovanju dejavnosti.

Intended learning outcomes:

Knowledge and understanding:

1. knowledge of effective organisation of the classroom and providing other material circumstances for effective inquiry-based learning;
2. knowledge of the adaptations of forms and methods of work to suit (pre)school children;
3. knowledge of the development of procedures and concepts;
4. knowledge of the pool of activities to accelerate cognitive development;
5. knowledge of the science related topics, suitable for implementation of the curriculum with inquiry-based learning;
6. knowledge how to plan, guide and conduct (scientific) inquiry;
7. knowledge about theories, related to childhood, children's development and learning;
8. recognition and consideration of individual needs of children and their implementation in planning the learning process.

Metode poučevanja in učenja:

1. Frontalna predavanja, praktično delo v majhnih skupinah.
2. Samostojno delo (seminar).
3. Za izvajanje je potrebna navzočnost laboranta.

Learning and teaching methods:

1. Lectures, experimenting in small groups.
2. Individual work (seminar).
3. Technician presence required.

Načini ocenjevanja:

**Delež (v %) /
Weight (in %)**

Assessment:

Portfolio	40	Portfolio
-----------	----	-----------

Projektno delo (raziskava)	60	Project (inquiry)
	/	

Reference nosilca / Lecturer's references:

prof. dr. Mojca Čepič:

1. PEČAR, Maja, ČEPIČ, Mojca. Conoscopic figure : a complex consequence of a not so simple phenomenon. European journal of physics, vol. 36, no. 1 (2015), 22 p.
2. ZIHERL, Saša, ČEPIČ, Mojca, BAJC, Jure. Positive and negative birefringence of materials in microwave region. American journal of physics : a publication of American association of physics teachers, 2018, vol. 86, issue 2, p. 110118.
3. FALETIČ, Sergej, ČEPIČ, Mojca. Propagation of polarized mechanical waves in an anisotropic medium. European journal of physics, 2018, vol. 39, art. no. 045001, 10 p.