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Leire Agirreazkuenaga Onaindia
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eman ta zabal zazu
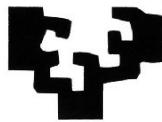
Universidad del País Vasco
Euskal Herriko Unibertsitatea
The University of the Basque Country

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International PhD dissertation

eman ta zabal zazu

Universidad del País Vasco   Euskal Herriko Unibertsitatea

'La edcuación no cambia el mundo,
cambia a las personas que van a cambiar el mundo"
Paulo Freire

"A clear image of a sustainable future influences present acting. It helps individuals
and society to (dare) take responsibility for the future. This means balancing life: enjoy
life today, understand causal effects in the past and plan for a sustainable, liveable
society also for next generations in the future"
Hofman y Heselmans (2016)

ESKER ONEZ

Ikerketa lan honek behar izan duen prozesu luzean pertsona batek baino gehiagok parte hartu du, horregatik ezin da bakarkako proiektutzat hartu. Izan ere, tesi honetan hizpide ditugun gaien aurreko ikerketek, batetik, eta aukeratutako edukiak egoki garatu ahal izateko hainbat pertsonen laguntzak, bestetik, bere biziko garrantzia izan dute. Horregatik, aurrean dugun tesia abiatu aurretik lan honetara hurbildu eta bertan murgildu nindutenen borondatea, baita lanaz gozatu eta azkenean emaitza aproposa azaleratzen lagundu nautenena ere gogora ekarri nahi nuke. Ezin izango nituzke prozesuan lagundu didaten guztien izenak ekarri eta, beharbada, ezustean norbaitena aipatu ez badut ere, aldez aurretik eskerrak eman nahi dizkiet bide malkartsua leuntzen lagundu nauten orori.

Lehenengo, tesi honen zuzendaritzaz arduratu diren Karlos Pérez de Armiño eta Manuel Martinez eskertu nahi ditut, tesiaren prozesu nekezean eskainitako gida akademiko eta bestelakoarengatik; hasierako bidea erraza izan ez bada ere, aurrera egiteko laguntzagatik. In the same way, I have to thank Beth Christie, from the University of Edinburgh, for facilitating the possibility to conduct this international thesis. From the very first moment, hardly even knowing each other, opened the doors for me and gave me the opportunity exchange proposals and ideas; thank you Beth for always being so kind. I would also like to thank Oren Pizmony Levy for giving me the opportunity to learn about his work and experiences in New York at the leading Columbia University.

Tesi honetan bere biziko garrantzia izan dute sakoneko elkarrizketek, talde eztabaidek eta behaketa zuzenek, eta hasiera batean lagina osatzean hainbat zailtasun agertu arren, zenbaiten laguntzari esker horiek ere erosotasunez gainditu ahal izan ditut. Honenbestez, eskainitako adeitasuna eskertu nahi diet ikerketa honetan parte hartzeko prest agertu diren hezkuntza zentroei, irakasleriari zein ikasleriari. Horien artean kokatu behar dut elkarrizketak eta behaketak bideratu baita informazioa eta datuak erraztu dizkidan Ingurugela taldeari. Eskerrik beroenak beraz momentu hartako Ingurugelako kideei, Joseba, Bea, Miren, Angélica, Jose Ignacio, Jazinto, Jose Manu eta Maiteri. Ateak ireki zizkidaten hasieratik, behar nuena lortzeko bideak zabalduz. Alde horretatik, ingurumen hezkuntzan jarduten dugunon artean kooperazioan lan egitearen garrantzia sustatu eta praktikara eramaten dutenen adibide direla esango nuke. Era berean,

eskerrak eman nahi dizkiot baita UPV/EHUko Garapen Iraunkorrerako eta Ingurumen Hezkuntzarako UNESCO katedran lan egiten duten pertsonei, aurrera daramaten lanak eta bertan egindako masterrak tesian barrena bidea argitzen lagundu zidalako, nire interesak zehazten eta definitzen alegia.

Horrez gain, ingeniari edo arkitekto izan gabe, ere etxe honen eraikuntzan beharrezkoak izan diren esku eta ahotsak aipatu nahi nituzke. Ama eta aita, zaila da zuen betiereko laguntza, babesa eta maitasuna eskertzeko hitzak jartzea. Eskerrik asko, bizitza den bidaia honetan erreferenterik onenak izatearren. Eskerrik asko ama zure bizi-poza eta arazoei aurre egiteko irribarrea egunero kontagiatzearren. Aita, zuretzako onena den horren inguruko grina gugana ere ekartzearren. Irati, zortea nirea zu ondoan izatea; mila esker zure distira bereziarekin bidea argitzearren, beti. Iker, eskerrik asko pazientziaz beterik bidelagun izatearren, momentu oro; eskerrik asko bereizten zaituen humore horrekin batera, batzuetan malkartsua izan den bide hau leuntzeagatik.

Eskerrik asko Kontxi, zure betiereko babesak eman didan energiagatik. Eta zelan ez, 'Bizi pozik' lema aurrera daraman 97 urteko amama Agurtzaneri, ingurukooi lema hori praktikan jartzen erakusteagatik, eta iraunkortasunaren praktika bihotzean eta eguneroko jarrera eta ekintzetan daramana. Hitz hauekin batera, eskerrik asko familia guztiari, hurbilagotik zein urrunagotik ondoan egon zaretelako.

Eskerrik asko hurbiletik nirekin batera abenturatxo hau bizi izan duten nire lagun maiteei, entzuteko edo dantzatzeko prest, momentuan behar nuena eskainiz. A Mayte y Nadia, aunque haya sido sobre todo en la distancia, siempre presentes, grazie. Eskerrik asko ere Iker (mukwano), biden zure txispa berriarekin eta animoekin agertzearren.

Azkenik, esker bereziak hor kanpoan, mundu iraunkorrago baten aukeran sinesten duzuen guztioi. Eskerrik asko zuen lan, esfortzu, maitasun eta energia guztion bizirautea ahalbidetzen duen planetaren ongizatearen eta berdintasunaren alde jartzearren.

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Akronimoak

CEIDA - Ingurugiroarekiko Irakasbideen Hezkuntza eta Ikerketarako Ikastegiak

CJE – *Climate Justice Education* – Justizia Klimatikoari buruzko hezkuntza

EAE – Euskal Autonomia Erkidegoa

EA21 – Eskola Agenda 21

EE – *Environmental Education* – Ingurumen Hezkuntza

EfS – *Education for Sustainability* – Iraunkortasunerako Hezkuntza

ESD – *Education for Sustainable Development* – Garapen Iraunkorrerako Hezkuntza

GCE – *Global Citizenship Education* –Hiritartasun Globalerako Hezkuntza

GIH – Garapen Iraunkorrerako Helburuak

GIHE – Garapen Iraunkorrerako Hezkuntza

GKE – Gobernuz kanpoko Erakundea

IH – Ingurumen hezkuntza

IUCN - *International Union for Conservation of Nature* – Kontserbazio Batasunaren Nazioarteko taldearen

LfS – *Learning for Sustainability* – Iraunkortasunerako Ikaskuntza

MGH – Milurteko Garapenerako Helburuak

OE – *Outdoor Education* – Aire Zabaleko Hezkuntza

SD – *Sustainable Development* – Garapen Iraunkorra

SE – *Sustainable Education* – Hezkuntza Iraunkorra

UN – *United Nations* – Nazio Batuak

UNEP – *United Nations Environmental Program* – Ingurumenerako Nazio Batuen Programa

UNESCO - *United Nations Educational, Scientific and Cultural Organization* - Hezkuntza, Zientzia eta Kulturarako Nazio Batuen Erakundea

Acronyms

BAC – Basque Autonomous Community

CEIDA - Centers for Environmental Education and Research

CJE – Climate Justice Education

EE – Environmental Education

EfS – Education for Sustainability

ESD – Education for Sustainable Development

GCE – Global Citizenship Education

IUCN - International Union for Conservation of Nature

LfS – Learning for Sustainability

MDG – Millennium Development Goals

OE – Outdoor Education

SA21 – School Agenda 21

SD – Sustainable Development

SDG – Sustainable Development Goals

SE – Sustainable Education

UN – United Nations

UNEP – United Nations Environmental Program

UNESCO - United Nations Educational, Scientific and Cultural Organization

I.   <u>ATALA:</u>
SARRERA

1. SARRERA

1.1 Ikerketaren aurkezpena

Tesi hau artikuluen bildumaren bidez egin da. Artikuluek aztertu dute Iraunkortasuna eta Garapen Iraunkorrerako Helburuak lortzeko bidean, iraunkortasunerako hezkuntzak izan dezakeen balioa, Euskal Autonomia Erkidegoan (EAE) iraunkortasunerako hezkuntzari buruzko ekimenetan oinarritzen den kasu ikerketen bidez. Horretarako kasu bezala ikertu dugu EAEko 5 hezkuntza zentrutan iraunkortasunerako biderako aldaketan, hezkuntza arloan eragile gakoen ikuspegitik: irakasleak, ikasleak eta administrazioa. Eskola Agenda 21 a lanzen duten zentruak ditugu erreferentzia gisa eta abiapuntu, adminiztraziotik lantzen duen Ingurugela lantaldea eta derrigorrezko bigarren hezkuntzako hezkuntza zentruetan aurrera eramaten diren ekintzak oinarritzat izanik.

Beraz, eragileen ikuspegiaz gain, EAEko administraren ikuspegitik ere garatzen da ikerketa. Lau artikulotan banatzen dira ekarpen nagusinak. Lehenengoak maila kontzeptualean ingurumen eta iraunkortasunerako hezkuntzaren arloko azterketa egiten du, proposamen bat planteatuz. Bigarren eta hirugarren lanek irakaslegoaren eta ikaslegoaren ikuspuntua aztertzen dute, ingurumen eta iraunkortasunarekiko, haien hezkuntza zentruko kontextuan (eskola Agenda 21eko esperientziaz abiaturik). Eta laugarren artikuloa administrazioak, Ingurugela zentroek, iraunkortasunaren hezkuntza eta beraz Agenda 21 programa ebaluatzeko erabiltzen diren tresnen inguruko ikerketa da. Tresna horiek aztergai izanik, iraunkortasunerako hezkuntzaren inguruan jorratzen den idea aztertzen da.

Ikerketaren testuinguru globala da gaur egun bizi dugun ingurumen-krisia, planetaren (eta bertako biztanleen) biziraupena mehatxatzen duena. Ekonomiak eta ekoizpen-sistemak ingurumen krisialdiari eragiten dio, eta hau kalte orokorrago baten sintoma da; krisia gizadiaren bizi-ingurunea suntsitzen duen sistema sozioekonomiko batek elikatu baitu. Gaur egun badakigu klima-aldaketak krisi humanitario asko bizkortzen dituela: hondamendi naturalak gertatzeko joera handiagotu du, lehorteek goseteak eragiten dituzte eta baliabide naturalengatik gatazkak sortzen dira.

Azken hilabeteetan bizi izan dugun koronabirusaren krisialdiak erakutsi digu naturaren desorekak horrelako pandemiak areagotzen dituela. Egunetik gauera gure bizimodua eta gure 'normaltasuna' irauli duen birusak, aurrez aurre inoiz baino argiago erakutsi digu, planetaren ongizate eta oreka ezak zer eragin izan ditzakeen. Natura da gure irakaslea hasieratik. Orain ere, aurrera egiteko nola edo zer norabide jarraitu behar dugun erakusten digu. Zientziak argi erakusten digu ze norabide jarraitu behar dugun gizarte osasuntsu bat izateko. Baina datuak argiak badira ere, oraindik arazoak jarraitzen du. Oraindik bidean gaude.

Giza eta ingurugiro iraunkortasunean oinarritutako mundu horretarako bidean jartzeko, aukera desberdinak ditugu. Horietako bat hezkuntzan jardutea da. Hiritarron izaera, bizi dugun testuinguruak baldintzatzen du, testuinguru horretan jasotzen dugun hezkuntzarekin batera. Momentu oro ikasten egon gaitezke, bai eskolan, etxean edo kalean jasotzen ditugun estimulu, ohitura eta jarreren bidez.

Iraunkortasunaren hezkuntzara bideratzeko, hainbat eremu aztertu ahalko genituzke, baina zehazki tesi honetan arautuko hezkuntzaren eremuan murgilduko gara. Eta zergatik hezkuntza formala? Bada, badira jada 40 urte baino gehiago ingurugiro eta iraunkortasuna hezkuntzaren arloan indarrean dagoela, bai hezkuntza ez formalaean, baita hezkuntza formalaren eremuan landu dena ere. Hezkuntza formaletik kanpo orain arte egin diren eta egiten diren jarduerak, berebiziko garrantzia daukate ingurugiro eta gizartearekiko kontzientzia hori garatzeko. Hezkuntza arautu edo formalean ere badago ingurumenari eta iraunkortasunari buruzko kezka. Hezkuntza formala da nolabait beharrezkotzat identifikatzen dugun atala: pentsamolde kritikoa duen gizarte bat eraikitzeko, partekatutako planeta baten bizi garen aldetik, norberaren inpaktuari buruz izan nahi dituen jarrerak eta portaerak bere kabuz epaitu ahal izateko.

Ingurumen eta iraunkortasunerako hezkuntzaren ibilbidean, kontzeptualizazio eta teorizazioak ditugu, gaur egunera arte, non, nazioartean Garapen Iraunkorrerako helburuak diren erreferente eta gida. Beraz, ikerketa honek ekarpena egin nahi dio iraunkortasunaren hezkuntzari eta lehendabizi hausnarketa kontzeptual-praktiko batetik abiatu beharra dugu.

Ikerketa honen eremu geografikoa EAEra mugatzen da kasu praktikoak aztertzerako orduan. Eta gure ikerketa halabeharrez nazioarteko ikerketen eta erronka zientifikoen

baitan kokatzen da. Ikerketa honetan kasu zehatzak aukeratu eta landu ditugu eta horietan oinarriturik ekarpen berriak egiten ditugu, kasu ikerketa zehatzek ikerketarako duten balioagatik (Pizmony-Levy 2011).

Nazioarteko testuinguru horretan, 1990ean lehen Ingurugiroarekiko Irakasbideen Hezkuntza eta Ikerketarako Ikastegiak (CEIDA) sortu ziren EAEn, zeinek aurrerago izena aldatu zuten eta Ingurugela deitzera pasatu ziren. Zentro hauek Ingurugiro Heziketarentzako laguntza zentroak dira, irakaslego ez-unibertsitarioari zuzenduak batez ere, Eusko Jaurlaritzako Hezketa, Unibertsitate eta Ikerkuntza Sailaren eta Hirigintza, Etxebizitza eta Ingurugiro Sailaren artean sinatutako hitzarmen baten bidez sortuak (Eusko Jaurlaritza, 1989). Ingurugeletan Eskolako Agenda 21 programa eta ikerkuntza proiektuak lantzen dira besteak beste.

Lehendabizi, 3 hilabetez lan praktikoa burutu dugu EAEko ingurugiro eta iraunkortasunerako hezkuntzan lan egiten duen administrazio publikoko bulegoetako batean, Bilboko Ingurugela bulegoan hain zuzen ere. Beraz, 'informatzaile gakoak' bezala identifikatzen ditugun pertsonen esperientziarekin batera definitu dugu ikerketa honen bidea.

Maila teorikoan gaian murgildu ahala, eta kasu zehatzak ezagututa, zenbait kezka agertu zaizkigu. Dokumentuak eta ikerketa lanak, nazioarteko esparruetan eta tokiko experientziak ezagutu ahal izan ditugu. Baina, zein da egunerokoan gai honetan lan egiten duten pertsonen iritzia? Azken 15 urteotan esperientzia eta joera ugari bildu dira eta ikertzaileari sortzen zaion galdera da. Galdera hau Ingurugelako aholkulari eta langileen interesekoa da baita. Izan ere, 'ebaluazioa' da lan honen parte, eta ikerketaren testuinguruan (EAEko ingurumen eta iraunkortasunerako proiektuentan) daukaten hutsunerik handienetakoa. Beraz 'behar' hau identifikatuta ikerketaren norabidea zehaztuz joan ginen.

Honekin batera, bestelako galderak agertu zaizkigu, hala nola, nortzuk dira mundu iraunkor baterako aldaketa eragin ahal duten eragileak, bereziki hezkuntza formalaren alorrean? Gazteria eta oraingo ikasleak dira etorkizuneko aldaketa agenteak. Ikasleen ikuspegia eta iritzia ezagutzea nahitaezkoa da iraunkortasunerako hezkuntza programa arrakastatsu baterako.

Beraz, hasieran aipatu bezala, ikerketa burutzeko, eragileak diren pertsonak hartzen ditugu abiapuntu 'aktore eta eragile' direnak hezkuntzaren sisteman eta horrela pertsonen iritziak, ikuspegiak, praktikak hautatzen ditugu, aztergai bihurtzeko eta ondorioak ateratzeko. Alor desberdinetan eragile diren pertsonak biltzen dira. Alde batetik, administrazio publikoaren mailan egunerokoan ingurumen hezkuntzan jarduten duten profesionalak. Bestetik, egunerokoan ere programa horiek hezkuntza zentroetan jorratzen dituzten irakasleak; eta azkenik ikasleak. Irakasleen eta ikasleen iritzian oinarritutako azterketa egiten dugu, dimentsio hori erabakigarria delako, betetzen duten eginkizuna kontuan hartuta, gizarte-eraldaketan abiatzeko, iraunkortasunean oinarritutako mundua lortu bidean jartzeko, eragile zuzenak baitira. Ikasle berriak dira etorkizuneko gizartea eta etorkizuneko munduaren oinarri. Gainera, tokiko esperientziak garrantzitsuak dira, mundu bat bere horretan delako tokian tokikoa eta horren ondorioz munduko arazoetan eragile bihurtuz.

Beraz galdera ikur nagusia zera izango litzateke: Zenbateraino dago sustraitua eta errotua iraunkortasunaren zientzia ikuspegia euskal hezkuntza formalaren eragileen artean? Hezkuntza sistema, iraunkortasunaren zientziaren ikuspegian oinarritzen ote da? Aurretik aipatu bezala, ebaluazioa da programa baten garapen eta hobekuntzarako laguntzen gaituena. Maila akademikoan, ingurugiro eta iraunkortasunerako hezkuntzaren inguruko ebaluazioa eta ikerketak administrazio publikoekin batera ebaluazio hauek hobetzeko ikerketen beharrizana nabarmentzen da. Ebaluazio jarraituaren hutsunea Ingurugelan identifikaturik dute honezkero. Ez da aukera eman edo hartu horretara eta beraz gure ikerketa hau hutsune hori betetzera ere badator, ekarpena eginez. Beraz, eragileen ikuspegiaz gain, EAEko administraziotik ebaluaziorako erabiltzen diren tresnen inguruko ikerketa ere izan da gurea

Kasu lokala aztergai nagusia bada ere, ez dugu galdu nazioarteko ikuspegia, beharrezkoa den ikuspegi hori. Nazioarteko Garapen Iraunkorrerako helburuek erakusten digute bat garela, eta beraz, tokiko iharduerek betetzen dituzte helburu global horiek: *think global, act local* idearekin bat eginez.

Zentzu horretan, beharrezkoa ikusi dugu EAEko kasua beste herrialde batzuetako esperientziak kontrastatzea, analisia hobeto bideratu ahal izateko. Nazioarteko ikuspegi hori lortu ahal izateko oso aberasgarriak izan dira Edinburgoko Unibertsitatean eta New

Yorkeko Columbia unibertsitatean egin ditudan bi ikerketa egonaldiak. Bertan, arakatu eta aztertu ditugun beste herrialde batzuetako kasuak eta esperientziak gure ikerketarako erreferentziak bihurtu dira.

1.2 Justifikazioa eta gaiaren egoera: krisialdi sozio-ekologikoa eta ingurugiro eta iraunkortasunerako hezkuntza

XX. mendearen erdialdetik aurrera "Azelerazio Handia" (*la Gran Aceleración)* deritzoguna gertatu da: giza espezieak lur planetan duen inpaktua biderkatu egin da, baliabide naturalen zikloak aldatu dira, espezieen galera-tasa bizkortu da, eta material berriak agertu dira, plastikoa edo aluminioa adibidez, eta horrek eragin handia du pertsonengan eta gure ingurugiroan. Ildo horretan, Geologia Zientzien Nazioarteko Batasunak aro geologiko berri bat izendatzea onartu zuen, *Antropozenoa,* P. J. Crutzen*,* kimikako noble saridunak (1995) proposatu zuen eta zabaltzen joan den kontzeptua. Holozenoa duela 10.000 urte hasi zen izozteen ondoren. Baina gaur egun gizakion eraginez ingurugiroa aldatzen ari da. Gizakiak planetan duen inpaktuak naturako indarrak berdintzen edo gainditzen ditu honezkero. Aro geologikoaren aldaketa 1950etik aurrera identifikatzen da, besteak beste adibidez, une horretatik aurrera ikusten baitira plutonioaren hondakin erradioaktiboen isotopoen metaketak, XX. mendearen erdialdean bonba atomikoekin egindako saiakuntza ugarien ondoren (Crutzen and Stoermer, 2000).

Antropozenoaren aro berri honetan, mundu mailako Aldaketa Global baten aurrean gaude. Aldaketa globala giza jarduerek planetan eragiten dituzten ingurumen-aldaketen multzoa da, bereziki lur sistemaren funtzionamendua zehazten duten prozesuen aldaketei dagokienez. Ziklo aldaketa planeta osoaren eta ziklo biogeokimikoen portaeran, batez ere nitrogenoarenean gertatzen ari da. Lurreko eta itsasoko ekosistemen galera, lurzoruen higadura, airearen kutsadura, berotegi-efektuko gasek eragindako berotze globala, eta baliabide naturalen uztiapena bere mugetara iristen ari dira (Stern, 2007). Biztanleriaren hazkundea, energia- eta material-kontsumoaren hazkundea, lurzoruaren erabilera-aldaketak eta kutsadura (plastikoak, pestizidak, disolbatzaileak) dira aldaketa globalaren eragile nagusiak. Lurreko klima-aldaketa dugu adierazpen ezagunena, aldaketa global horren zati bat da. Aldaketa hau, neurri batean, arrazoi naturalengatik izan daiteke, baina, gaur egun, klimaren gaineko inpaktu handiena giza

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jarduerek sortzen duten gasen isurketaren ondorioa da, denbora eskala ezberdinetan. Klima aldaketa eragiten duten gas kopuruak planeta osoa gehiago berotzea areagotzen du, lurrak izan beharko lukeena baino berotegi efektu handiagoa sortuz. Klimaren parametro guztietan eragiten du. Horren ondorio nagusiak honako hauek dira: korronte ozeanikoetan aldaketak, itsas mailaren igoerak, ekaitz boteretsuagoak eta luzeagoak, lehorteak, suteak eta ekosistemen desagerpena. Efektu hauek guztiak elkarren artean lotuta daude, lurreko baldintzak lotuta baitaude eta itsasoetan gertatzen den aldaketa batek, adibidez, haizeetan izango du eragina eta honek, aldi berean, inguruko uztetan eta ekoizpenean. Era berean, Lurrean gertatzen diren aldaketa horiek inpaktua dute bertako biztanleengan; beraz, fenomeno horiek guztiak (Steffen et al. 2011a) aldaketa globaltzat hartzen ditugu (Onaindia 2018).

Gizateria, gaur egun, eta azken hiru hamarkadetan gutxi gorabehera, baliabide naturalak sistema ekologikoak ordezka ditzakeena baino azkarrago erabiltzen ari da. Milurtekoko Ekosistemen Ebaluazioari buruzko Nazio Batuen txostenaren arabera (Milenium Ecosystems Assessment 2005), aztertutako ekosistemen zerbitzuen %60 degradatzen ari dira (hau da, bizi irauteko premiazko diren berezko zerbitzu naturalak, airea, ura eta abar) edo modu ez jasangarrian erabiltzen dira. Ekosistemetan egin diren aldaketak, inpaktuak sortzen ari dira eta txarrerako dira, hala nola gaixotasun berrien agertzea eta zabalkundea, uraren kalitatearen bat-bateko aldaketak, arrantzalekuen kolapsoa eta eskualdeetako klimen aldaketak. Naturak energia-sistema eta mantenugaien zikloa hasi eta mantentzen ditu biosferan, eta sistemaren osotasunari eutsiz gero, funtzionatzeko gaitasuna denboran mantentzen da (Begon, Harper, and Townsed 2006).

Gizateria osoa landareen, animalien eta planetaren aniztasun biologikoa osatzen duten beste organismo batzuen eta ekosistemen zerbitzu-fluxuaren mende dago erabat. Ekosistemen zerbitzuek hornikuntza-zerbitzuak barne hartzen dituzte, hala nola elikagaia eta ura, energia, materialak, eta erregulazio-zerbitzuak, hala nola klimaren erregulazioa, uholdeak, gaixotasunak, uraren kalitatea eta hainbat kultura-zerbitzu.

Arazoa ez da planeta fisikoari egiten diola kalte, baizik eta bertan bizi garen pertsonei ere bai. Adibidez, kutsadurak eragindako gaixotasunak gero eta hedatuagoak dira. *The Lancet Commission on Pollution and Health* aldizkariak egindako ikerketa baten arabera, 2015ean sei heriotzetatik batek kutsadurarekin du zerikusia. Izan ere, alderdi

guztiak jotzen ditu kutsadurak: ura, airea eta lurra. Ikerketa berri baten arabera, airearen kutsadura da heriotza goiztiarraren eragilerik handiena. Kutsadura-mota hori 2015ean 6,5 milioi hildakorekin lotuta dago (Landrigan et al. 2018).

Gainera, egungo eredu sozioekonomikoan, ingurugiroaren arazoek kalte handiagoa egiten diete gutxien dutenei, horiek sortzeko erantzunkizun gutxien dutenak direlarik. Nazioarteko Oxfam Gobernuz Kanpoko Erakundearen 2015eko txosten baten arabera, munduko biztanleen % 10ek soilik eragiten du berotegi-efektuko gasen ekoizpenaren % 80 (1go irudia) (Oxfam, 2015). Klima-aldaketaren ondorioek gehien kaltetzen dituztenak, gutxien kutsatzen duten pertsonak dira.
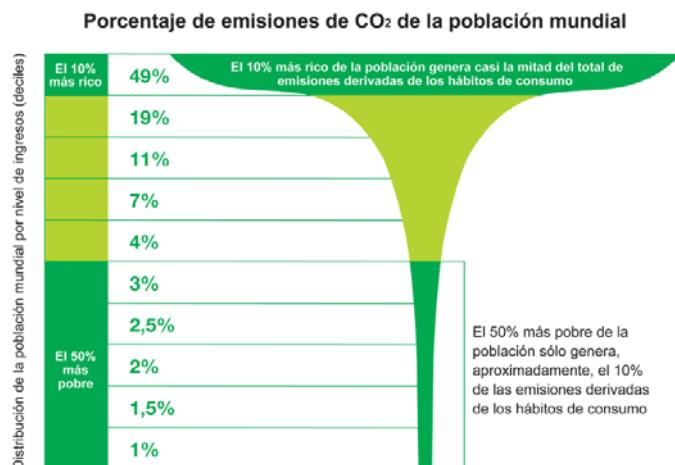
1. irudia: Diru-sarrera globalak eta horri lotutako kontsumo-emisioak (Oxfam, 2015)

Bestalde, egungo kontsumo-ereduak planetak luzaroan irauteko gai ez den energia-gastua eskatzen du. *Aztarna ekologikoa* adierazle bat da, pertsona, eskualde edo herrialde batek baliabideak sortzeko eta hondakinak asimilatzeko erabiltzen duen, lurrazalean eragindako eragina erakusten digu, eta hektarea baliokideetan neurtzen da. Bestalde, biogaitasuna lurrazal batek baliabideak ekoizteko eta hondakinak asimilatzeko duen ahalmena da, eta hori ere hektarea baliokideetan neurtzen da. Adierazle horiek aztertu ondoren, gaur egun, planeta defizit ekologikoan dagoela esan daiteke, aztarna ekologikoaren arrastoa biokapazitatea baino handiagoa baita. Munduko per capita defizita 2,6 hektareakoa da pertsonako (1. irudia) (Global Fotprint Network 2018).
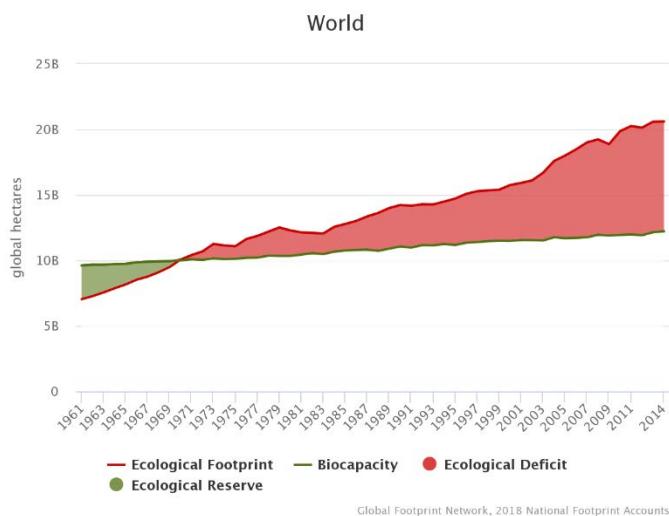
2. Irudia: Defizit ekologiko mundiala (Global Footprint Network, 2018)

Planetaren muga biofisikoetatik goragoko energia kontsumo-egoera honen eraginez eta energia-krisiari aurre egiteko, alternatiba berriak sortzen hasi dira, hala nola energia berriztagarriak, eolikoa edo eguzki-energia. Gaur egun, aurrerapen handiak egin dira azpiegitura horietan, eta inbertsioak irekitzen ari dira ildo horretan. Horrek, era berean, eztabaida sortzen du eguzkiaren energia monetaratzen eta merkantilizatzen hasten den unetik, adibidez. Energia berriztagarrien munduko polemika politiko eta ekonomikoez haratago eta aurrerapen teknologikoez gain, datuek erakusten digute (Grosseck *et. al.* 2019) baliabide naturalen kontsumoa murriztu eta egungo ekoizpen-eredua aldatu beharra dagoela. Hau da, pentsamoldea eta aldaketa kultural eta sozialak egon behar dira.

Lur planetaren iraunkortasuna dago zalantzan gaur egun. Beraz, lurraren iraunkortasuna bihurtu da etorkizunerako eta bizi iraupenerako erronka nagusia. Munduko agintari asko eta bereziki biztanleak onartzen hasiak dira honezkero, garapen ekonomikoaren egungo eredu nagusiak ezin direla mundu guztian hedatu. Herrialde garatuetako *per capita* kontsumo-mailak ezin dira orokortu planetako egungo populazio osora eta are gutxiago etorkizuneko belaunaldietako populaziora, jarduera ororen mendeko kapital naturala ezabatu gabe. Iraunkortasunaren beharra sortzen da baita, halaber, garapen-ereduak, xahutzeak eta gizarteko desorekak ingurumenaren ikuspegitik, ezinezkoa den egoera batera daramatela onartzean. Iraunkortasunerako trantsizioa premiazkoa da, ekosistemak mundu osoan hondatzeak, denbora-muga bat ezartzen digulako. Iraunkortasuna lortzeko igarobidea edo trantsizioa gaur eguneko helburu nagusia da. Ez dugu espazio berriak sortzeko edo ilargia edo marte planeta kolonizatzeko astirik.

Daukagun ingurumen aberastasuna eta egoera salbatu behar dugu eta degradatuta dagoena birsortzeko inbertitu (Groodland and Daily, 1996).

Testuinguru honetan, iraunkortasunerantz igarotzeko, garrantzitsua da pertsonek egoeraren berri eta jabe izatea eta erronka handi horren inguruan norbanakoaren eta gizartearen rolari buruz hausnartu ahal izatea; eta hausnarketa horrek, norbanako guztiok gizarteko parte garen heinean, gure erantzukizunaz jabetzea, iraunkortasunerantz hurbiltzeko beharrezkoa da gizabanako bakoitzak bere portaera pertsonala aldatzea baita (kontsumitzaile bezala adibidez).

Horretarako, hezkuntza oinarrizko baliabide erabakigarria da, ingurumen-kontzientzia eta norberaren portaeren aldaketak garatu dezakeena eta mundu jasangarriagoa baterantz abiatzeko prozesuan heziketa berri batean sakontzea ezinbestekoa da. Ikuspegi honetan oinarritzen gara eta eragina izateko helburuaz ikertzen dugu, planetaren iraunkortasunaren aldeko aldaketarako. Beraz aztertu beharko dugu ea gure hezkuntza sistema arautuak eta heziketa bideak ere bideraturik ote dauden planetaren iraunkortasunerako helburu horretarantz.

Iraunkortasunaren aldeko aldaketa sozial horiek lortzeko, ezinbestekoa da gizartearen ingurumen-kontzientzia indartzea eta zabaltzea, bai herritarrena, bai enpresa-sektorearena, botere politikoena eta erabakiak hartzaileena. Horretarako hezkuntzak eta komunikazioak garrantzizko esparru eragileak bihurtzen dira. Iraunkortasunerako Hezkuntza, ikuspegi formaletik edo arautetik, irakaskuntzako arauzko prestakuntza eta prestakuntza ez-formaletik, funtsezkoa da ikasleengan edukia eta kontzeptuak ez ezik, iraunkortasunaren arlo praktikoan, sentibera egiten dituzten funtsezko balioak ere txertatzea (Gonzalez-Geraldo 2018).

Hezkuntza sistema eta heziketa prozesua, gizarte eta ingurumen arazo globalari erantzuteko eta iraunkortasunaren igarobidean prestatzeko tresna garrantzitsua da. Alde horretatik, mundu akademikoak badu zer esana iraunkortasunaren erronkaren aurrean. Iraunkortasunerako praktikak ezinbestekoak dira, baina azterlan eta proiektuen ebaluazioetan, aurkeztutako erronkak eta aukerak aztertzea, oso baliagarria da proiektu eta ekimen horiek hobetzeko eta, horrela, hezkuntza-programak iraunkortasunerako bidean eta trantsizioan hobetzen joateko. Ikergai garrantzitsu baten aurrean gaude eta

gizartean ere eragin handikoa dena, etorkizuneko belaunaldien bizi iraupena dagoelako jokoan.

Baina, zein norabidetara garamatza gaur egunean indarrean dagoen hezkuntza sistemak? Urteetako esperientzia dugu ingurumen hezkuntzan eta larrialdi klimatikoko une batean sarturik gaude bete betean.Iraunkortasunerako arauzko hezkuntza eta heziketa bidea aztertu beharra dago. Une hau, hausnartzeko eta aztertzeko unea da. Ingurumen-hezkuntza 70eko hamarkadatik lantzen hasi den gaia da, lehenik, ingurumen-hezkuntza gisa, eta, ondoren, iraunkortasunerako edo garapen jasangarrirako hezkuntza gisa. Alor honetan, ikerketa kasu zehatzen interesa handituz joan da (Grosseck et al. 2019). Badira ikerketa enpiriko ugariak eta beraz gurea ez da lehena. Hala ere, nazioarteko arazoa den honi aurre egiteko, tokian-tokiko kasuetako ingurumen-hezkuntzako gobernantzari eta politikei buruzko ikerketak ez dira ugariak, beraz ikerkuntzaren arlo horietan hutsunea dagoela nabaritu da (Aikens, McKenzie, and Vaughter 2016). Era berean, tokiko kasuetan, iraunkortasunerako hezkuntzan ikuspegi eta joeren ezarpenean, funtsezkoak diren eragileen ikuspegiak ikertzea, iraunkortasunaren inguruko ikerkuntza lerroa sendotu eta aberastu egiten dute.

Euskal Autonomian Erkidegoan, tokiko ikuspegitik zenbait ikerketa burutu dira iraunkortasunerako hezkuntzaren arloan, besteak beste lehen hezkuntzako ikaslegoari dagokionez, EAEko Ingurumen hezkuntzaren inguruan (*Martinez et. al.* 2017; Gutierrez, 2011). Honez gain, EAEko unibertsitateetako bilatzaileetan aurkitutakoaren arabera, 'iraunkortasunerako hezkuntza' bilatuz, honako tesi hau izango da arlo honetan bigarren hezkuntzan zehazki oinarritzen den lehena.

2017an Eusko Jaurlaritzak argitaratu zuen *2030eko Jasangarritasunerako Hezkuntza plan estrategia*. Bertan 2030rako helmugak eta jarduera lerroak identifikatzen dira. Besteak beste, plan honetako bigarren helmuga da "Hezitzaileen, prestatzaileen eta bestelako eraldaketa-eragileen gaitasuna indartzea". Eragile hauen rolari garrantzia ematen zaion heinean, ikerketa hau ere, arlo horretatik lerrotzen da. Ezinbestekoa ikusten da lehenik eta behin eragile hauen ikuspegiarekiko egoeraren analisia egitea.

Hezkuntza sistemako tokiko eragileen, (adibidez, irakasleak, ikasleak, politika-formulatzaileak) gobernantzari buruzko eta horien interkonexioaren ikuspuntua hartu

eta aztertuko du gure ikerketak. Hezkuntza-politika zehatz batetik abiatuko gara, Euskal Autonomi Erkidegokotik, baina aldi berean unibertsala den gai bat jorratuko dugu, tokian tokiko eta globalaren arteko lotura dialektikoa elkar elikatzen dutelarik (Anderson-Honevitt 2001).

Bestalde, gai honi buruzko artikuluak eta liburuek erakusten digute deskonexioa dagoela ingurumen eta iraunkortasunerako hezkuntza lantzen dituzten programen diseinuaren eta ezarpen praktikoaren artean. Hau da, hezkuntza zentruetako geletan ikasten diren ezaguerak ez direla praktikara eramaten eguneroko bizimoduan. Horregatik, garrantzitsua da funtsezko eragileen ahotsa kontuan hartzea iraunkortasunaren aldeko ibilbide eraldaketarako

Beraz, ikerketa honetan, eragileak jartzen ditugu erdigunean ingurumen hezkuntzatik iraunkortasunaren bidera abiatzeko. Horrela, ingurumen-hezkuntzako eta iraunkortasuneko proiektuetarako ekarpen praktiko bat sortzea izango da gure emaitza. Ikerketa honen ekarpenak eta ondorioak transferentzia burutzeko balioko dute, Euskal Autonomia Erkidegoko hezkuntza sistemaren baitan. Azpimarratu behar da aztertutako ikerketa kasuen eta helburuen zati bat, ingurumen eta iraunkortasunerako hezkuntzaren ezarpenean funtsezkoak diren eragileekin batera egindako lanaren ondoren definitu dela, arlo praktikoa hobetzen ere laguntzeko helburuz.

Laburbilduz, ingurugiro eta iraunkortasunerako hezkuntzaren azterketa, premiazkoa da gaur egunean Nazio Batuen 2030 iraunkortasunerako helburuak betetzeko. Gure azterketan lehendabizi kontzeptualizazioan sakontzen dugu, iraunkortasunaren esanahian bereziki, planeta iraunkorra bermatzeko. Hezkuntzaren bidez lortzen dute etorkizuneko belaunaldiek prestakuntza eta beraz hezkuntza sistema arautuan egiten dena aztertzen dugu, eragileen ikuspegiak, iritziak eta praktikak erdigunean jartzen ditugularik. Honela, irakasle, ikasle eta euskal administrazio publikoko agintari eta zerbitzarien ikuspegiak, usteak eta praktikak aztertzen ditugu. Ikerketa honen ondorioz burutu eta argitaratu ditugun artikuluak, nazioarteko ikuspegi bateko partaide dira. Beraz emaitzak ez dira gure inguruan bakarrik aintzat hartzekoak, nazioarteko testuinguruan ere ekarpena direla adierazten dute.

2. HELBURUAK ETA IKERGALDERAK

Sarreran azaldu dugun bezala, planetaren larrialdiaren ondorioz eta beraz pertsonen bizi iraupena etorkizunean zalantzan izanik, planetaren iraunkortasuna bermatzeko neurrien artean, Iraunkortasun Hezkuntza sortu da. Arlo horretan kokatzen da gure ikerketaren helburu nagusia. Izan ere, gai honetan erreferentziatzat eta abiapuntutzat hartzen ditugu Nazio Batuen nazioarteko 2030 agendaren 17 helburuak, hau da, Garapen Iraunkorrerako Helburuak. Laugarren helburua 'Hezkuntza Kalitatea' dugu, bereziki iraunkortasunera bideratzen gaituen hezkuntza eredua garatzea eta hobetzea.

Beraz, tesi honen **helburu orokorra** honakoa da:

Iraunkortasuna eta Garapen Iraunkorrerako Helburuak lortzeko, iraunkortasunerako hezkuntzak izan dezakeen balioari buruzko nazioarteko eztabaidei ekarpen bat egitea, Euskal Autonomia Erkidegoan iraunkortasunerako hezkuntzari buruzko ekimenetan oinarritzen den kasu ikerketa baten bidez.

Bestaldetik, honakoak ditugu **helburu zehatzak**:

1. Lehenik, Iraunkortasun eta Ingurugiro Hezkuntzari dagozkion definizio kontzeptualen jatorria eta bilakaera aztertzea. Kontzeptuek denboran barrena adierazpen eta esanahi desberdina hartu dute. Azterketa hau hezkuntza sistemaren barruan, Garapen Iraunkorretarako Helburuen (GIH) aterpean txertatzeko ikuspegiarekin, kontzeptuen berrikuspena argitu behar dugu: Alde batetik Iraunkortasunerako trebakuntza (*Learning for Sustainability*) eta bestetik Hezkuntza iraunkorra edo jasangarria (*Sustainable Education*). Helburu zehatz hau ondoko argitalpen honen bidez landu dugu: "Education for Agenda 2030: What direction do we want to take going forward?", *Sustainability*. 2020, 12 lib, 2035. zk.

2. Bigarren hezkuntzako irakasleek EAEko iraunkortasunerako hezkuntzari buruz duten pertzepzioa ezagutzea eta iraunkortasunerako hezkuntzari eta GIHei buruzko ezagutza inplementatzeko eta arrakastaz jarduteko gakoak

identifikatzea, aurrerago jarrera-aldaketa batean islatzeko. Bigarren hezkuntzako irakaslegoaren iraunkortasunerako hezkuntzari buruz dituzten jarrerei, ikuspegi eta metodologiei dagokienez funtsezko faktoreak aztertzea inplikatzen du helburu honek. EAEko derrigorrezko bigarren hezkuntzako eskolen kasu zehatzak hartuta, iraunkortasunerako hezkuntza-proiektuen ezarpena irakasleen ikuspegitik aztertzen da. Kasu- azterketak testuinguru sozioekonomiko eta ingurumen-testuinguru desberdinetan kokatzen dira. Analisiak, halaber, 2030 Agenda Globalari eta haren etorkizuneko ezarpenari buruzko ezagutza-mailaren diagnostikoa ebaluatu nahi du. Helburu zehatz hau ondoko argitalpen honen bidez landu dugu: "Embedding Sustainable Development Goals in Education. Learning for sustainability from the teachers' perspective in the Basque Autonomous Community", *Sustainability*. 2019, 11 lib, 1496 zk.; doi:10.3390/su11051496

3. Iraunkortasunerako Hezkuntzaren pertzepzioa ikastea Euskal Autonomia Erkidegoko bigarren hezkuntzako ikasleen ikuspegitik aztertzea. Azpimarratzekoa dugu hau, ikasleen ikuspegia sarritan ez delako ezagutzen eta beraz aintzat hartzen da. Azken batean etorkizuneko belaunaldia izango dena, ikasketa garaian duen gaiaren ezagutza eta planetaren iraunkortasunari buruzko ikuspegiak aztertzen ditugu. Helburu zehatz hau ondoko argitalpen honen bidez landu dugu: "Secondary students' perception, positioning and insight on Education for Sustainability". *International Research in Geographycal and Environmental Education (Onartuta, argitaratzear)*

4. Iraunkortasunerako hezkuntza praktikan jorratzerako unean, administraziotik lantzen den 'aldaketarako' teoria (*Theory of Change*) eta igarobide edo trantzisioan abiatzeko eredua aztertzea. Horretarako, nazioarte mailan egin diren ikerketa batzuen bilketa eta azterketa lana egitea, eta zehazki baita, EAEko administrazioko "Ingurugelaren" lantaldetik erabiltzen diren ebaluazio-tresnak aztertzea da helburua.

Gainera, helburu espezifikoa izango da azrtertzea, nola lagundu dezakeen ikerketak, administrazioekin harreman zuzena izanik, ebaluazio-prozesu horietan; erronkak eta bertuteak nabarmenduz eta ebaluazioan hobekuntzak

proposatuz. Helburu hauek ondoko argitalpen honen bidez landu ditugu: "Governance and evaluation in local Environmental and Sustainability Education: a critical analysis of assessment instruments". *Environmental Education Research (Bidalia).*

Laburbilduz, gure ikerketak ondorio praktikoak atera nahi ditu, ondoren baliagarria izan dadin aplikatzeko. Azterketaren azken helburua hezkuntza-diseinu eta -ezarpen arrakastatsurako irizpideak formulatzea da, iraunkortasunerako aldaketa eta eraldaketan eragin ahal izateko, hezkuntzaren bidez, derrigorrezko bigarren hezkuntzako eragileen ikuspegiak aintzat harturik.

Horrela, ondoko **ikergalderak** dira gure ikerketaren gida:

1. Zer norabide jarraitu behar du hezkuntza-esparruak etorkizun iraunkorrago batera bideratzeko?

2. Nola ikusten dute bigarren hezkuntzako irakasleek iraunkortasunerako hezkuntza? Eta, zehazki, partaide aktibo dira eskolako agenda 21 programan? Zeintzuk dira identifikatzen dituzten erronkak eta aukerak?

3. Nola hautematen dituzte bigarren hezkuntzako ikasleek iraunkortasunerako hezkuntza-programak? Funtsezkotzat jotzen dute iraunkortasunerako hezkuntzaren programaren ezarpena? Nola ikusten dute beraien burua, aldaketa globaleko mundu honetan? Eta eskolaren rola edo papera ingurumen eta iraunkortasunerako hezkuntzaren programarekiko?

4. Zer ulertzen dute hezkuntza-sistemaren kudeaketarako eragileak ingurumen eta iraunkortasunerako hezkuntzaz? Zein da lortu nahi den ingurumen-hezkuntzaren ikuspegia? Zein joera dago administrazio horien diseinu- eta ebaluazio-prozesuetan eta nola lagun dezake ikerketak? Zein joera dago administrazioan, horien diseinu- eta ebaluazio-prozesuetan eta nola lagun dezake ikerketak?

3. MARKO TEORIKOA

3.1 Iraunkortasuna eta garapen iraunkorra

Iraunkortasuna helburu nagusi berri bat bihurtu da arlo sozial eta politikoan. Horren bidez, gizabanakoek, erakundeek eta nazioek neurriak diseinatu eta burutzen dituzte, momentu honetan bizi dugun gizarte- eta ingurumen-krisiari aurre egiteko, indarrean dauden baliabideak iraun ditzaten. Kontzeptu esanguratsu bezala, kontzeptuak esanahi desberdinak hartzen joan da eta beraz horren joera ezberdinak azaldu dira.

Terminoak berak gogora ekartzen du denboran barrena aldatu eta zehaztu beharreko zeozer bihurtu dela. Ingurumenari eta Garapenari buruzko Munduko Batzordeak (Brundtland Batzordea izenez ezaguna) "garapen iraunkorra" kontzeptua sortu zuen 1987an *Our Commun Future* txostenean, horrela definituta: *"Egungo beharrak asetzen dituen garapena, etorkizuneko belaunaldiek beren beharrak asetzeko duten gaitasuna arriskuan jarri gabe"* (Brundtland 1987). Ikuspegi honek inplikazio politiko eta ekonomikoak ditu, indarrean dagoen sistema ekonomiko eta sozialerako; baina inplikazio etikoak ere bai, belaunaldien arteko elkartasunari dagokionez. Izan ere, etorkizuneko belaunaldiekiko zorra baiestatzen du, baina belaunaldi barruko elkartasuna ere gehitzen du, egungo belaunaldietan egoera ahulenean daudenak ere aintzat hartzen dituelako. Iraunkortasunak nolabaiteko agindua dakar berekin: gure ondorengoen interesak ere errespetatzea. Puntu honetatik haratago, ordea, ziurgabetasun eta desadostasun ugariak ere agerikoak dira, zientzietako edozein arlotan gertatzen ohi den bezalaxe.

Iraunkortasun terminoa garapen iraunkorraren kontzeptuaren ondorioa da, Brundtland txostenaren ondoren. Nazio Batuen Erakundeak kontzeptua banakatzen du garapen iraunkor egoki batek kontuan hartu beharko lituzkeen hiru dimentsioak proposatuz. Beraz, "garapen iraunkorraren" iraunkortasuna hiru dimentsioren integrazioan datza: ingurumenekoa, soziala eta ekonomikoa. Banaketa hori "garapen iraunkorra" kontzeptuaren baitan sortutako definizio zabaletik dator, eta, horren ondotik etorriko litzateke "iraunkortasuna", aurreko kontzeptuaren edukia erabat zehazteko eta bideragarria egiteko. Ideia horretan oinarrituta, "garapen iraunkorra", lehen aipatutako

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hiru dimentsioen arteko oreka gisa ulertzen da, iraunkortasuna erdigunean duelarik. (3. irudia).
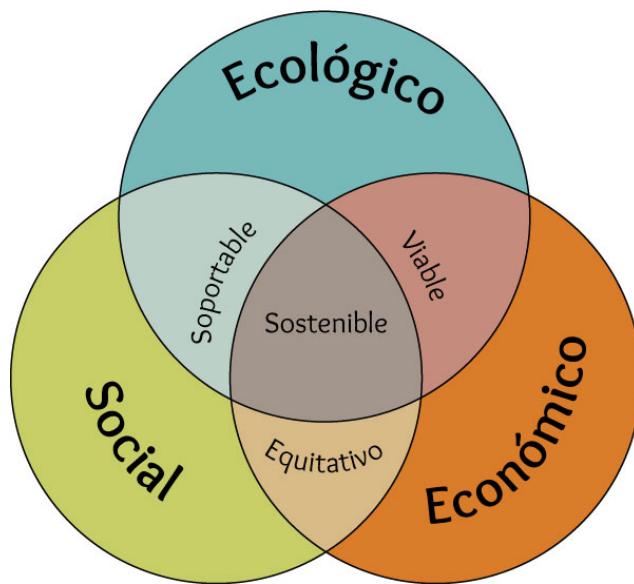
3 irudia: Iraunkortasuna oreka ingurumen, gizarte etaekonomia-dimentsioen orekan arabera irudikatzen duen diagrama (erref.).

- Ingurumen-dimentsioa: natura-ingurunea, sistema naturalaren ongizatea erdigunean izatea adierazten du; biodibertsitatearen eta ekosistema naturalen ongizatea du helburu. Beraz, baliabide naturalen ustiapen-mailak mugara iritsi gabe (karga-ahalmena) erabili behar dira eta funtsean degradaziorik eragin gabe ingurunean .

- Dimentsio soziala: pertsonak erdigunean daude, giza sareak eta kulturalak indartuz, interes komunei bide demokratiko eta ez-baztertzaileetatik eusteko.. Hori guztia honela bideratu beharko litzateke, jarrera eta praktika pertsonal eta kolektiboak aldatuz, norberarengan eta besteongan erreparatuz, justizia soziala, hezkuntza, osasuna, bakea eta lasaitasuna balioesteko, belaunaldiz belaunaldi giza bizi-kalitatea hobetuz eta mantenduz (Vallance, Perkins, and Dixon 2011).

- Dimentsio ekonomikoa: ingurune naturala arriskuan jarri gabe, baliabide naturalen oinarria eta kontserbazioa mantenduz burutu beharko litzateke garapen ekonomikoa, errentagarritasun eta aberastasuna barne, tokiko, eskualdeko eta munduko esparru guztietan (Melgar-Melgar and Hall 2020).

Ildo horretan, iraunkortasuna edo jasangarritasuna hiru zutabe edo dimentsio horien arteko oreka gisa ulertzen dugu (Basiago, 1995). Nazio Batuek onetsi zuten kontzeptualizazioa da.

Hala ere, kontzeptualizazio horrek ez du gizarte eta ingurugiro krisialdiaren errealitatea erabat islatzen. Azaldu dugun iraunkortasun hirukoitzaren teoriak (Basiago 1995), ekonomiaren garapena eta ingurune naturala maila berean kokatzen ditu, beraz, ingurumenak ez du ekonomia baldintzatzen. Horregatik, maila berean kokatutako hiru dimentsioetan oinarritutako iraunkortasunaren ideiak, kritikak jaso ditu eta kontraesankortzat ere jo ohi da (Robinson 2004). Berez kontraesana gordetzen du bere horretan, etengabeko hazkunde ekonomikoan oinarritzen delako "garapena", iraunkortasun edo jasangarritasunarekin bateraezina delako, planetak ere bere mugak dituelako. Baliabide naturalak mugagabeak balira harturik, identifikatzen duen hazkunde eta garapen ekonomiko hori, kontraesanean oinarritzen da, izan ere, muga biofisikoak eta baliabide naturalen bidezko zerbitzuak kontuan hartzen ez dituenez gero, ezinezko bihurtzen du nolabaiteko 'iraunkortasunik' bermatzea. Beraz ezinezkoa litzateke 'garapen iraunkorra' testuinguru horretan sortzea.

Ondorioz, aurreko diagrama erreferentziatzat hartuta, proposamen berri bat abiatzen da (5. irudia). Eredu edo paradigma berri honetan, iraunkortasunak problematikaren ikuspegi globala sortarazten digu, gizarte-, ingurumen- eta ekonomia-alderdiak integratuz eta ekosistema naturalaren eta haren mugen barruan bizitzeko beharra kontuan hartuz; izan ere, gure biziraupen biofisikoa bermatu ezin badugu, ezin dugu beste helbururik ase. Bestela esanda, dimentsio biofisikoak nagusitasuna dauka, mugak inposatzen dituelako.

Ildo horretan, ikuspegi batzuek (Folke et al. 2016; Melgar-Melgar and Hall 2020; Rockström et al. 2009) lehentasun nagusia ingurumen naturalaren ongizatean jartzen dute, horrela gizartea eta, ondorioz, ingurune horretan orekan dagoen ekonomia indarrean iraun dezan. Hurrengo diagraman azaldtzen da ideia hori. Hori dela eta, hasieran erakutsitako ikuspegia, hiru dimentsioak maila berean jartzen dituena, kritikatzen duen, ikuspegi berritzailea azaltzen zaigu gaur egunean. Honako proposamen hau sortzen da:
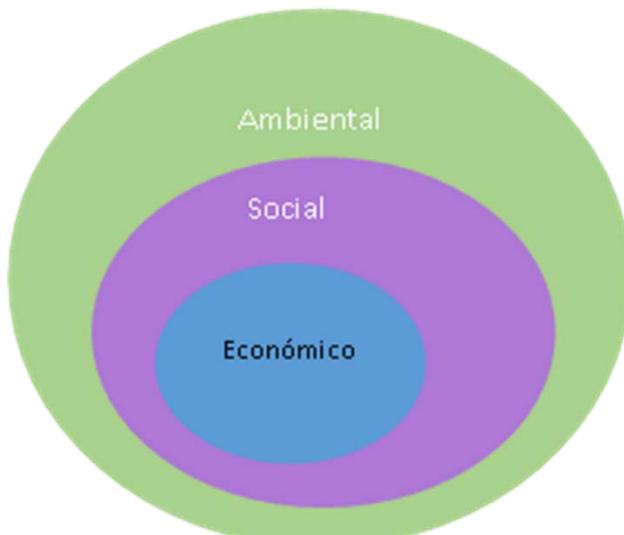
4. irudia: Iraunkortasuna bermatzeko beharrezko den jerarkia erakusten digu diagrama honek.

Gure ikerketa iraunkortasunaren ikuspegi honetan oinarritzen dugu, iraunkortasun ekologikoak lehentasuna baitu iraunkortasun sozial eta ekonomikoa lortzeko; izan ere, planetaren ongizaterik gabe ez dago gizarte edo ekonomiaren iraupenik. Ekintza iraunkorrak biosferaren oreka mantentzen du eta beraz bizi giroa gizateriaren aldeko mantentzen da eta etorkizuneko belaunaldiak ere bizitza bermaturik izango dute. Beraz ingurugiro osasuntsua behar da beste dimentsioen iraunkortasuna bermatzeko.

Zenbait egilek ekologiaren legeetan oinarritutako sistema ekonomiko bat proposatzen dute, planetaren erabilera iraunkor edo jasangarri baterako printzipio ekologikoetan oinarritutako ekonomia bat funtsezkoa delako (Cairns 2006). Iraunkortasunak modu sinple batean esan nahi du planeta honetan bizi behar dugula, bertan betiko biziko bagina bezala (Porritt 2012), ez baitago beste planetarik bizitzeko.

3.1.1   Garapen Iraunkorreko Helburuak 2030

Garapen Iraunkorreko Helburuek (GIH) Nazioarteko 2015-2030 Agenda Globala osatzen dute. Agenda hori 2015eko irailean onartu zuten Nazio Batuek eta 150 estatuburu eta gobernuburu baino gehiagok onartu dute honezkero. Jakina, urte askoren osteko ahalegina izan da, gizarte zibilaren eta beste erakunde batzuen partaidetza-taldeen eraginez. 17 helburu definitu ziren, 'inor atzean ez uzteko' helburuaz eta

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2030rako, planetarentzat etorkizun iraunkorra edo jasangarria eraikitzeko.

Aipaturiko GIHak, 2000-2015 Milurteko Garapen Helburuen (MGH) oinordekoak dira. Aurreko agendan ez bezala, oraingoan munduko herrialde guztiak inplikatzen dira agenda hori indarrean ezartzera, eta ez soilik garapen bidean dauden herrialdeak. "Garapen iraunkorrak" eskatzen duen begirada zabaldu nahi izan da, planeta, globala eta bakartzat harturik eta ekintzei zentzu integral eta holistikoa emanez, munduko alde batean egiten dena, beste alde batean ere eragina duelako. Beraz zera onartu da Nazio Batuetan: pobreziarekin amaitzeko ekimenek klima-aldaketaren aurkako estrategien eskutik joan behar dutela eta horregatik halabeharrez eta aldi berean guztientzat gizarte-premia batzuei heldu behar zaiela hezkuntza, osasuna eta genero-berdintasunari.

17 GIHak definitzen dituen 2030 Agenda honek, iraunkortasuna modu integralean ulertzeko tresna bat eskaintzen digu. Hala ere, lehen azaldu den bezala, ikerketa honetan iraunkortasunak eta garapen iraunkorrak ingurumen-, gizarte- eta ekonomia-dimentsioa inplikatzen dute, arlo soziala eta ekonomikoa ingurumen-sistemaren mende dagoela ulertuta (Liu et al. 2007; Turner et al. 2003). Folke *et. al.* egileek ideia bera dute, horrela GIHen hierarkian (5. irudia) islatuz (Folke et al. 2016; Turner et al. 2003). 5. irudiarekin identifikatzen gara, iraunkortasun holistikoaren ikuspegiaren hiru dimentsioak txertatzen dituelako, hauek maila desberdinean jarriz. Mailek adierazten dutena da, biosferaren ongizateak gizartea eta ekonomiaren ekintzak bermatzen dituela, ordena horretan.

5. irudia: Iraunkortasunari buruzko perspektiba bat, non erakusten den ekosistema osasungarriak aurrebaldintza bat direla giza ongizaterako eta garapen ekonomikorako (Folke et. al, 2007)

Agenda 2030 global eta integralean, 17 Garapen Iraunkorreko Helburuak sortzea eta definitzea aurrera pausu eta lorpen handia izan da; hala ere, horrek ez du saihestu hainbat sektoretatik kritikak eragitea (Castro 2004; Lélé 1991), batez ere helburuak lortzeko bermerik ez delako zehazten.

Alde batetik, agenda sinatzen duten herrialdeentzat juridikoki derrigorrezkoa ez izateak nolabaiteko mesfidantza sortzen du agendaren helburuak betetzeko unean. Onartzen duten herrialdeek konpromiso morala dutela ulertzen da, baina agian ez da hori gauzatzeko behar den ahalegina, ez baita derrigorrezkoa edo legalki loteslea, aurrekontu publikoak. bideratzeko 2030rako jarritako helburuak lortzeko. Herrialde horiek edozein programaren jarraipenean egiten den bezalaxe, helburuak betetzeko egiten diren aurrerapenen jarraipena eta ebaluazioa egiteko erantzukizuna bermatu beharko lukete. Horrez gain, bete nahi ez duten herrialdeek ere ez dute zertan bete behar jarritako helburuak, nahiz eta herrialdeko ordezkariak 2015eko iraileko Batzar Nagusian erabakitakoa onartu.

Bestalde, 8. helburuak ere, hazkunde ekonomiko iraunkorra sustatzeak, eztabaida handia sortu du. Maila akademikoan, literatura eta eztabaida gehien sortu duen gaia 'garapen iraunkorraren' kontzeptua da, ekonomilarien artean bereziki (Frey 2017; Ribeiro-Duthie 2020; Venkatesan and Luongo 2019). Gorago erakutsi dugun bezala, kontzeptu horrek orain arteko ekonomia ortodoxoaren paradigmak baldintzatzen du. Paradiga horrek hazkunde ekonomikoa ongizatearen eta enplegu osoaren igoerarekin parekatzen du, eta horrek hazkunde iraunkorraren beharra eta ontasuna zehazten ditu (Bermejo et al. 2010). Baina indarrean dugun hazkunde ekonomikoaren eredua da hain zuzen ere, gaur egungo ingurumen- eta gizarte-krisira eraman gaituena; azken batean, gure bizitzako ekosistema eta, ondorioz, gure etorkizuna desegiten duen eredua delako. Hori dela eta, hazkunde esponentzialaren ereduaren aurrean, Latouche ekonomistak dez-hazkunde (*decrecimiento*) kontzeptua planteatzen du, "Pentsamolde politiko, ekonomiko eta sozialaren korronte bat, ekoizpen ekonomikoaren murrizketa erregular kontrolatuaren aldekoa, gizakiaren eta naturaren artean oreka-harreman berri bat ezartzeko helburuarekin, baina baita gizakien euren artean ere" (Latouche 2008). Barne Produktu Gordina (BPGa) bezalako hazkunde ekonomiko liberalaren adierazlearen alternatiba gisa, ekonomia ekologikoaren ikuspegitik beste adierazle batzuk aintzat

hartzea planteatzen da, hala nola giza ongizatea edo aberastasunaren banaketa neurtzea, ekosistemen zerbitzuak kuantifikatuz eta beraz baloratuz (Kubiszewski et al. 2017).

Era berean, UNESCOk kulturari dagokion helburu bakar bat ere ez agertzea salatu du. Une honetan martxan dago hori eskatzen duen kanpaina bat, *17+1: Hizkuntz eta kultura-aniztasuna* kultura GIHetan sartzeko beharra aldarrikatzen duena (UNESCO Chair 2019) pertsonentzat duen aberastasunagatik eta garapen iraunkorrerako ezinbestekotzat argudiatuz.

Lehen aipatu bezala, kritika horiek gorabehera, GIHen 2030 Agenda aurrerapen handia da gizarte- eta ingurumen-iraunkortasunerantz abiatzeko. Ekintza-esparru bat ematen digu, aurrera zer norabidetara egin behar dugun kokatzeko eta ulertzeko. Era berean, nazioartean etorkizun iraunkorra eraikitzeko gida gisa balio digun tresna ere bada.

3.2 Ingurumen Hezkuntzatik Iraunkortasunaren Hezkuntzara

Sarreran erakutsi dugun bezala, "Lurra" sistema hondatzen ari da, agian atzera bueltarik gabe, zientzialarien datuen arabera. Prozesu horretan, gizarteak eta norbanako bakoitzak bere zeregina du. Hainbat eragileren ekintza behar da planetaren erronka horri aurre egiteko. Benayasek (2019) adierazten duen bezala, Lur planetak, hainbat ikerketa egin ondoren, zainketa intentsiboak behar dituzten sintomak eta gaixotasunak agertzen ditu, bere gaitz batzuen tamaina edo premia dela eta. Beharko lituzkeen arretak konplexuak dira, eta, beraz, diziplina anitzeko taldeek burutu eta egin beharko dute: espezialistak ekonomia globalean, baliabideen kudeaketa jasangarrian, desberdintasun sozialen murrizketan, biosfera eta biodibertsitatearen zaintzan, politika berde eta administrazio eraginkor eta gardenean, teknologia humanistikoan, hezkuntza-arloko adituak etab. Jakina eta ezaguna da hezkuntzak gizarte eta ingurumen aldaketaren eragile gisa bete dezakeen eginkizuna, baldin eta, gainera, parte-hartzea ikaskuntza espazio gisa erabiltzen bada (Benayas and Marcén 2019). Eta azken aldian bilakaera nabarmena gertatu da esparru horretan, Ingurumen Hezkuntzatik Iraunkortasunaren Hezkuntzara igarotzeko bidea hasi delako. Azken ikuspuntu hau jorratu dugu guk gure ikerketan. Izan ere, azken aldian aldaketa nabaria gertatu da hezkuntza-eremuan eta, adibidez, Iraunkortasunerako

Hezkuntza ikuspuntua sortu da. Honek ingurugiro eta gizarte krisialdiak, eta planetaren etorkizuna ere, modu integral eta holistikoan jorratzeko beharra azpimarratzen du.

Gaur egun, Iraunkortasunerako Hezkuntzaren joera gorakadan dago, eta agenda mediatiko eta sozialeko gaia da. Ingurugirorako hezkuntzari buruz hirurogeita hamarreko hamarkadan hitz egiten hasi zen, eta, horregatik, beharrezkotzat jotzen dugu aurrekariei buruzko ibilbide bat egitea, hainbat korrontetatik eboluzionatu baitu. Sarreran aztertu dugun bezala, gaur egun ingurumen-krisi batean gaude, eta premiazko aldaketa eta ekintzak behar dira (Stern and Stern 2007). Krisi honi buruz duela hamarkada asko hitz egiten hasi zen (Meadows et al. 1972) eta orduan ere pentsatzen zen hezkuntzaren bidez aldaketak sortarazi ahal izango zirela, etorkizuna iraunkorrago baterako oinarri eta giltzarri izango zela. Horrela sortu zen Ingurumen Hezkuntzari buruzko kezka eta zabalkundea. Ingurumen Hezkuntza kontzeptuaren jatorrian oinarrizko ideiak anitzak izan ziren arren, egile eta une giltzarri batzuk bilduko ditugu.

Aitzindarietako bat Patrick Geddes (1854-1933) izan zen, botanikari eskoziarra, hezkuntza eta ingurumenaren kalitatea lantzen eta erlazionatzen hasi zena. Bere lan aitzindaria 'aire zabaleko jarduerak' (*outdoor activities*) ikaskuntza aktiborako tresna gisa erabiliz hasi zen (Palmer and Neal 2003a). Bestalde, Disingerrek (1983) babestu zuen lehen aldiz ingumen hezkuntza terminoa erabiltzea, Parisen egindako Kontserbazio Batasunaren Nazioarteko taldearen (International Union for Conservation of Nature, IUCN) "Ingurumen-hezkuntza eskola-curriculumean" topaketaren ondoren, eta definizio hau sortu zuten:

> *"Environmental education is the process of recognising values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the interrelatedness among man, his culture and his biophysical surroundings. Environmental education also entails practice in decision making and self-formulation of a code of behaviour about issues concerning environmental quality"* (IUCN 1970).

Beranduago eta denboran barrena jauzi bat eginez, Nazioarteko esparruan, 1970eko hamarkadaren hasieran, 1972an Stockholmen egin zen Lurraren Nazioarteko Goi Bileran, hainbat herrialdetako zientzialariak eta liderrak bildu ziren ingurumen-egoerari

buruzko kezka gero eta handiagoa zegoelako, hala nola airearen eta uraren mugaz gaindiko kutsadura (Seyfang 2003), eta, lehen aldiz, hezkuntza sisteman gaia sartu behar zela onartu zen eta Goi Bilerako txosteneko 96. gomendioan islatu zen (United Nations 1972). Laburbilduz, hezkuntza arautua eta heziketa ez arautua aldaketarako tresna bihurtu behar zirela, zera aldarrikatu zen:

"*It is recommended that the Secretary-General, the organizations of the United Nations system, especially the United Nations Educational, Scientific and Cultural Organization, and the other international agencies concerned, should, after consultation and agreement, take the necessary steps to establish an international programme in environmental education, interdisciplinary in approach, in school and out of school, encompassing all levels of education and directed towards the general public, in particular the ordinary citizen living in rural and urban areas, youth and adult alike, with a view to educating him as to the simple steps he might take, within his means, to manage and control his environment*" (United Nations, 1972: 24).

Goi-bilera horretatik eratortzen da Nazio Batuen Hezkuntza, Zientzia eta Kulturarako Erakundearen (UNESCO, ingelesezko siglengatik) eta Nazio Batuen Ingurumen Programaren (UNEP, ingelesezko siglengatik) arteko programa bateratua, 1975ean sortua. Bi agentzia horiek osatutako talde bateratu baten bidez, hain zuzen ere, Ingurumen Hezkuntzari buruzko bilera bat egin zen 1975eko urrian Belgraden, eta bertan erabaki ziren ekintza-ildo batzuk eta nazioarteko goi-bilera bat egiteko beharra (Withrington, 1977). Belgradeko bilera horretan, nazioartean 'Ingurumen Hezkuntzari' buruz adostutako lehen definizioetako bat lortu zen:

"*Lograr que la población mundial tome conciencia sobre el medioambiente en el que vive y se interese por él y sus problemas y que adquiera los conocimientos, aptitudes, actitudes, motivaciones y comportamientos necesarios para trabajar individualmente y colectivamente en la búsqueda de soluciones a los problemas actuales y para prevenir los que pudieran aparecer en lo sucesivo*" (UNESCO, 1975:17).

Funtsezko aurrekari horien ondoren, nazioarteko mugarrietako bat dena sortu zen: Tibliseko Ingurumen Hezkuntzari buruzko Gobernu arteko Gailurra, 1977an (UNESCO, 1978); izan ere, goi-bilera hori ingurumen-hezkuntzaren gaiari buruzkoa izan zen, eta bertan azpimarratu zen beharrezkoa zela hezkuntzaren bidez ingurumen-ezagutza garatzea, planetaren etorkizuna bermatzeko. Une hartan, Ingurumen Hezkuntzaz hitz egin zuten, *Ingurumen Hezkuntzari buruzko Adierazpena* onartu zuten. Adierazpen hori hezkuntza eta ezagutzaren transmisio gisa definitu zen eta ingurumen-kontzientzia sortzea zuen helburu.

Gro Harlem Brundlandek (garai hartan Norvegiako emakumezko lehen ministroa) eta bere lantaldeak egindako *Brundland txostena*-k, inflexio puntu bat markatu zuen. Txosten horrek garapen iraunkorraren kontzeptua aldarrikatu eta sartu zuen (Brundtland, 1987), eta aurrekari argia sortu zuen beste nazioarteko mugarri batentzat: Rio de Janeiron 1992an egindako Lurraren Goi Bilera. Goi-bilera horretan 130 gobernu-liderrek parte hartu zuten, eta Nazio Batuen topaketetan gauza berri gisa, gizarte zibila eta Gobernuz Kanpoko Erakundeak (GKE) ere bertan egon ziren eta hitza izan zuten, erabakiak hartzeko gune batean. Goi-bilera horretan, ingurumen-hezkuntzari buruz hitz egiten jarraitu zen, baina jada honezkero hasi zen iraunkortasunari buruzko ikuspegia sartzen eta garapen iraunkorraren definizioa lantzen eta sakontzen. Ordutik aurrera, iraunkortasunaren ikuspegiak zabalkundea lortu zuen garapenari buruzko eztabaida guztietan. Nazio Batuek antolatutako Lurraren goi-bilera horretan (1992) hainbat dokumentu garrantzitsu eta funtsezko sinatu ziren. Besteak beste, *Agenda 21*aren definizioa nabarmentzen dugu pieza nagusi gisa, XXI. mendean garapen iraunkorra lortzeko estatu bakoitzak zer egin behar duen zehazten duen programa. Programak pobreziaren, hondakin toxikoen eta lehorteen inguruko gaiak jorratzen ditu. Bestalde, *Iraunkortasunerako 21 Printzipioen Deklarazioa* ere nabarmentzen da, Agenda 21en esparruan nazioarteko lankidetza-programetarako oinarria izango liratekeenak (United Nations, 1992). Hau da, Rio-ko Adierazpenak etorkizun iraunkorrerako plan bat ezarri zuen, eta Agenda 21a hura gauzatzeko gida-tresna bihurtu zen.

1992ko Rioko goi-bilerari jarraitu zion Tesalonikan 1997an egindako beste goi-bilera: 'Ingurumenari eta Gizarteari buruzko Nazioarteko Konferentzia: Hezkuntza eta iraunkortasunerako kontzientzia publikoa'. Gailur horren ondoren, UNESCOren txosten batek, *Education for Sustainability. From Rio to Johannesburgh: Lessons learnt from a*

decade of commitment, hausnarketa gisa adierazi zuen garai hartan indarrean zegoen hezkuntza sistema arautua oso urrun zegoela iraunkortasunaren hezkuntzatik, eta "ikuspegi berri" bat eskatu zuen (UNESCO, 2002:10), bai eta hezkuntzari buruzko "pentsatzeko modu sakonago eta anbitziotsuago bat" ere (UNESCO, 2002: 8). Ildo horretan, Nazio Batuen Garapen Iraunkorrerako Hezkuntza hamarkada (2005-2014) izendatu zen eta ezinbesteko erreferentzia giltzarri bihurtu da. Ondoren, Ingurumen Hezkuntzari buruzko Nazioarteko Laugarren Konferentzia (Ahmadabad, 2007), Garapen Iraunkorrerako Hezkuntzari buruzko UNESCOren Mundu Konferentzia (Bonn, 2009) eta Garapen Iraunkorrari buruzko Nazio Batuen Konferentzia (Rio +20, 2012) nabarmendu behar dira. 2012ko azken konferentzia honetan Rio 1992ko goi-bileran hasitako ildoak garatu eta sakondu ziren eta, berrikuntza bezala, aurrekoan kontuan izan ez ziren ahotsak kontuan hartu ziren, besteak beste talde indigenenak.

Gailur horietaz gain, aipatzekoak dira ere bai ingurumenaren esparruan 2000. urtean New York-en egindako Milurteko Garapenerako Helburuen Gailurra (New York, 2000) eta Garapen Iraunkorrari buruzko Munduko Gailurra (Johannesburgo, 2002).

Milurtekoaren Garapenerako Helburuen (MGH) adierazpena gertaera garrantzitsutzat jotzen da Nazio Batuek ezarritako mugarrien artean. MGHak betetzetik urrun geratu ziren arren, 15 urtetan "jardunbide egokiak" eta "ikasitako irakaspenak" bezalako adibideak sortu ziren. Horiei jarraitu zieten Nazio Batuek 2015ean ezarri zituzten Garapen Iraunkorrerako Helburuak (GIH), gaur egun abian daudenak.

GARAPEN IRAUNKORRERAKO HEZKUNTZA (GIHE)
LORTZEKO NAZIOARTEKO ERABAKIAK:

1987	Gure Etorkizun Bateratuan (Ingurumenari eta Garapenari buruzko Munduko Batzordearen txostena, Brundland izenez ere ezaguna) garapen iraunkorra honela definitu zen: "Oraingo belaunaldiaren beharrak asetzen dituen garapena, etorkizuneko belaunaldiek beren beharrak asetzeko duten gaitasuna arriskuan jarri gabe".
1992	Garapen Iraunkorrari buruzko Nazio Batuen Konferentzia (Rioko goi-bilera, Lurraren goi-bilera). Programa 21eko 36. kapituluan, hezkuntzak, prestakuntzak eta sentsibilizazioak garapen iraunkorra edo jasangarria lortzeko duten zeregin erabakigarriari buruzko nazioarteko eztabaidak jaso ziren.

2002	Garapen Iraunkorrari buruzko Munduko Goi Bilera (Johannesburgoko Goi Bilera, +10 ibaia). Johannesburgoko Aplikazio Planean Nazio Batuen Garapen Jasangarrirako Hezkuntzaren Hamarkadarako proposamen bat sartu zen. Nazio Batuen Batzar Nagusiak, 2002ko abenduan egindako berrogeita hamazazpigarren bilkura-aldian, Hamarkada 2005eko urtarrilean hasteko ebazpen batetan onartu zen
2012	Garapen Iraunkorrari buruzko Nazio Batuen Konferentzia (Río +20). Nazioarteko komunitateak ebatzi zuen "garapen iraunkorrerako hezkuntza sustatzea eta garapen iraunkorra modu aktiboagoan integratzea hezkuntzan, Nazio Batuen Garapen Iraunkorrerako Hezkuntzaren Hamarkadatik harago ("nahi dugun etorkizuna" azken dokumentuaren 233. paragrafoa).
2013	Nazio Batuen Garapen Iraunkorrerako Hezkuntzaren Hamarkadaren jarraipen gisa, UNESCOren Konferentzia Orokorrak bere egin zuen garapen iraunkorrerako hezkuntzarako munduko ekintza-programa.
2014	Lantalde Irekiak egindako Garapen Iraunkorreko Helburuen proposamenean, Garapen Iraunkorrerako Hezkuntza helburu gisa onartu zen Mascateko Akordioan.
2014	GIHEriburuzko UNESCOren Munduko Konferentzian, munduko ekintza-programa abiatzea erabaki zen.
2015	Hezkuntzari buruzko Munduko Foroan (Incheon, Koreako Errepublika) GIHEri buruzko 2014ko Munduko Konferentziaren emaitzak kontuan hartzea aurreikusten da.
2015	Irailean, Garapen Iraunkorrerako Helburuei buruzko 2030 Agenda abiarazi zen, eta bertan, kalitatezko Hezkuntza (GIH4) delakoaren bidez aipaturiko helburuak indarrean jartzea.
2019	Klimaren goi bilera, 2019ko irailean ospatu zen. Berezitasun gisa, goi bileraren aurretik bi egun *Youth Climate Summit* antolatu zen, gazteriari gaiarekiko ahotsa emateko.

1. taula: GIHEren ildoko konpromisoak (UNESCO, 2014:10).

Gaur egun, Garapen Iraunkorreko Helburuek nazioarteko agendan erabat gihartu eta txertatu dira eta ezinbestekoak bihurtu dira, bestelako eta zeharkako gai guztietan, hala nola klima-aldaketa, pobrezia, justizia, berdintasuna; agendaren beraren gainean. Hau da, iraunkortasunaren zeharkako kontzeptu gisa ulertzen da, nahiz eta eztabaidak eta kontraesanak izan (ikus 3.1 atala), eta ekintza-esparru eta gida bat eskaintzen die erakundeei, gobernuei, gizarte zibilari edo norbanakoei.

Nazioarteko esparru horrek nazioarteko goi-bilera eta topaketen bilakaera erakusten du eta asko aurreratu da iraunkortasunerako hezkuntzaren bidean. Erakundeen erabakiak garrantzitsuak dira ekintza-esparru bat sortzeko eta premiazkoa da hezkuntza sistemak, arautuak eta ez arautuak, etorkizun jasangarria indarrean jartzeko. Baina hezkuntzaren bidezko eragina ez dela nahikoa ere begi bistakoa da. Oraindik orain, kontsumo frenetikoaren bizimoduak irabazi egiten du sentsibilizazio-programen aurrean (Pauw et al. 2015). Beharrezkoa da iraunkortasunerako hezkuntzan egindako aurrerapenak beste esparru batzuetara ere zabaltzea, kudeaketa orokorrago baten barruan, adibidez erabaki politikoetara eramatea (Aikens et al. 2016), modu eraginkorrean norabide bererantz aurrera egiteko.

3.3 Kontzeptuen berrikuspena eta joerak

Ingurumen hezkuntzaren arloan, kontzeptu batzuen edo besteen esanahiaren inguruko eztabaidak, hauen definizioaren bilakaera eragin du. Kontzeptuak aldakorrak dira, bai eta praktika, ikaskuntza eta gizartearen eta haren eragile indibidual eta kolektiboen bilakaera ere. Diskurtso ugari daude, eta zenbait egileren eskutik kontzeptuen bilakaera eta irakurketa berria burutzen saiatuko gara.

Korronte batzuek uste dute kontzeptuaren definizioa ekintza edo praktika bezain garrantzitsuak direla; beste batzuek, berriz, kontzeptuek praktikan ikasitakoa zehazten dutela defendatzen dute. Kasu honetan, lehenik eta behin, azterketa kontzeptuala egingo dugu, ondoren gogoeta bat egiteko.

3.3.1. Ingurumen Hezkuntza

Aldez aurretik, ingurumen hezkuntzaren (IH) lehen definizioetako batzuk partekatuko ditugu. Akademiaren esparruan, ingurumenari buruzko hezkuntza tresna egokitzat identifikatzen da, ingurumen-arazoei aurre egiteko. Horrela Schoenfeld (1975) laburki azpimarratzen du *"it is a cadre of scientific leaders that sets the environmental agenda in this country [USA]",* eta beste lan batzuetan, Carson (1962), Ehrlich (1968), Goldsmith et. al. (1972) eta Hardin (1968) besteak beste ideia berbera defendatzen dute. Beraz, ingurumen-agendaren baitan ingurumenari buruzko hezkuntzak berebiziko garrantzia duela adierazi zuten egile hauek (Palmer and Neal 2003a).

Kontzeptua erabiltzen hasi zenetik, Ingurumen Hezkuntza gehiago lotu da ingurumenaren eta natur-zientzien adarrarekin, eta gutxiago alderdi sozial, ekonomiko eta politikoekin (Mckeown & Hopkins, 2003, p119).

Mundu akademikoan eta gaiaren ikerkuntzan, erreferentzia gisa *Journal of Environmental Education* da gaia horretan espezializatutako lehen aldizkaria. Aldizkari horretako artikulu batean, Stapp et al (1969:34) proposatzen duten ingurugiro hezkuntzaren (*Environmental Education*) definizioa hartzen da erreferentziatzat arlo honetako bilakaeran:

> "*Environmental education is aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems and motivated to work toward their solution*".

Definizio horrekin batera, pertsonak maila indibidualean lantzeko lau helburu zehazten ditu (Stapp, 1969):

"*A clear understanding that man is an inseparable part of a system, consisting of man, culture and biophysical environment, and that man has the ability to alter the interrelationship of this system.*

1. *A broad understanding of the biophysical environmental problems confronting man-made and its role in contemporary society.*

2. *A fundamental understanding of the biophysical environmental problems confronting man, how these problems can be solved, and the responsibility of citizens and government to work toward their solution.*

3. *Attitudes of concern for the quality of the biophysical environment which will motivate citizens to participate in biophysical environmental problem-solving*".

Stapp-en definizio hori aurrekari gisa erabiltzen da geroago formulatu diren definizioetarako, aurretik aipatutako IUCNrena bezala. Stapp-ek dioenez, hezkuntzaren bere ikuspegiak erdigunean jartzen du kontserbazioa. Bere adierazpenak dionez: *"The role of the citizen in working, both individual and collectively, toward the solution of*

problems that affect our well being" (Stapp, 1969). Era berean, bere definizio honek (goian aipatua) ez du ezagutza bakarrik aipatzen, baizik eta ekintza bihurtuko litzatekeen pentsamolde-aldaketa ere bai, baina betiere ingurumen-iraunkortasun ezari erreferentzia eginez. Hori dela eta, ez da harritzekoa ingurumen-hezkuntza lantzeko espazioa Natur Zientziak izatea, erabilitako terminologia *biophysical*, *Environment* eta abarrak izanik.

Horrez gain, Annette Goughek (2013), Ingurumen Hezkuntzako terminologiaren eta ikerketaren historiari buruzko hausnarketa egitean, azpimarratu du kontuan hartu behar dela mendebaldeko eta gizonezkoen ikuspegitik egindako definizioak direla. Hamiltoni (1991) erreferentzia egiten dio esanez horrek erabiltzen duen "gizona" (*man*) edo "bera" (*he*) terminologiaren erabilerak emakumeekiko baztertzailea dela eta anbiguotasuna sortzen duela (Gough 2013). Belgradeko Konferentzian hartutako definizioetan, "gizona" edo "bera" erabili zen eta, 1975ean, definizioa eguneratzean, kontzeptu batzuk aldatuak izan ziren, adibidez, "gizonak eginda" (*man-made*) "eraikia" (*built*) bezala berridatzi zen. Lotuta egon daiteke Emakumearen Nazioarteko Urteak eta Nazio Batuek idatzitako jarraibideek idazketa ez-sexista defendatzen zutela, eta hau eragina izaten ari zela. Hala ere, "gizona" (*man/he*) Tibiliseko konferentziako erredakzioaren parte izaten jarraitu zuen 1978an (UNESCO 1978). Irakurketa eta hausnarketa hori garrantzitsutzat jotzen dugu, atal honetan proposatu nahi den kontzeptuaren historiari eta bilakaerari buruzko ikuspegiari dagokionez.

Ingurumen-hezkuntzaren paradigmari buruzko eztabaidan ere, Mrazek ekarpen garrantzitsu bat egin zion definizioari *Alternative Paradigms in Environmental Education Research* (Mrazek 1993) lanean. Azterlan hori kritikatzen dute beste egile batzuek. Louse Chawlak, adibidez, kontu batzuk leporatzen dizkio, hala nola paradigma hitzaren erabilera desegokia, edo *Environmental Education Research* delakoaren barruan hedabideen edo beste iturri batzuen presentzia falta.

3.3.2 Garapen Iraunkorrerako Hezkuntza

Garapena iraunkorra behar duela izan edo bestela ez dela garapena, pentsamendu honen sorrerarekin bat eginez, hezkuntzari dagokionez, paradigma berri bat areagotu zen. Ez da soilik terminologia aldaketa bat, sakoneko praktikak eta ondorioak eragiten duten

joera aldaketa bat baizik. Horrela, Garapen Iraunkorrerako Hezkuntza (GIHE) hedatzen hasten da. GIHEren defendatzaileek argudiatzen dute iraunkortasunaren kontzeptu horrek ideia holistiko eta integralagoa dakarrela gaiari heltzeko moduan, hau da, iraunkortasunaren hiru dimentsioak barne hartzen dituela: ingurumena, gizartea eta ekonomia. Sterlingek (2009) defendatzen duenez, bere ikuspegitik, ingurugiro hezkuntza garapen iraunkorrerako hezkuntzaren zati bat da, landu beharreko hiru zutabe horietako bat bezala ulertuko litzatekeena. Mackeowek eta Hopkinsek ikuspuntutik, ingurugirorako hezkuntzak eta GIHEak antzekotasunak dituzte; hala ere, diziplina bakoitzaren garrantzia banaka nabarmentzeko desberdintasunei ere egiten diete erreferentzia: "IH eta GIHE desberdinak dira, baina osagarriak. Garrantzitsua da IHren eta GIHEren agendak, lehentasun eta garapen programatiko bereiziei eustea. Biek elkarri eragingo diote, eta bakoitzak bestearen hazkunde independenteari etekina aterako dio" (McKeown & Hopkins, 2003). Analisiaren begirada nazioarteko dokumentuetan jarrita, Belgraden eta Tbilisiren ikuspegia pertsonengan (hau da, giza eskubideetan, demokrazian edo bizi-mailan) gutxiago kokatzen da, eta gehiago ingurumenaren egoera zailean. Biztanleriaren egoera eta bizimodu zailari gehiago heldu zitzaion 1980 eta 1990eko hamarkadetan, Lurraren Goi Bilera, Agenda 21eko Programa eta Nazio Batuen konferentzietan (Mckeown & Hopkins, 2003).

Laurogeitahamarreko hamarkadan, Brundtlandeko garapen iraunkorraren definizioarekin, eta Rioko Lurraren Goi Bileraren ondoren (1992), Garapen Iraunkorrerako Hezkuntza (GIHE) kontzeptua txertatzen hasi zen nazioarteko eztabaidetan. UNESCO, nazioartean joera bideratzeko helburua duen nazioarteko erakundea den aldetik, GIHE terminoa erabiltzen hasi zuen. Horrela, nazioarteko adierazpenetan gehien erabiltzen den aldaera 'garapen iraunkorra' da, eta beraz GIHE, honela definitzen du UNESCOk:

> *"ESD empowers learners to take informed decisions and responsible actions for environmental integrity, economic viability and a just society, for present and future generations, while respecting cultural diversity. It is about lifelong learning, and is an integral part of quality education. ESD is holistic and transformational education which addresses learning content and outcomes, pedagogy and the learning environment. It achieves its purpose by transforming society."* (UNESCO, 2014: 11)

Kontzeptu horrek ideia holistiko bat biltzen duela berresten du definizioak, iraunkortasuna termino gisa txertatuz. Hala ere, "garapena" terminoak sortzen du eztabaida. Hau da, "garapena" edo "garapen iraunkorrak" zer esan nahi duen zalantzan jartzen dugu (ikus 3.2 atala), horrek sortzen baitu ondoko hausnarketa: zer den garapena edo nola izan daitekeen garapen iraunkorra, honek hezkuntzan adierazpenik izan beharko lukeen edo ez.

Bestalde, garapen iraunkorrerako hezkuntza terminoa eremu politiko eta instituzionalean ere erabat sartu da eta giro honetan esangura berezia hartu du, hizkera politikoaren baitan erabat txertaturik dugularik gaur egunean. Izan ere, aipatu dugun bezala, UNESCOk Garapen Iraunkorraren kontzeptu hori sartu eta gihartu du erakundeko diskurtsoan, eta era horretan kontzeptu nagusi bihurtu du. 2030 Nazioarteko Agendan ere Garapen Iraunkorrerako Helburuetan ageri da (Nazio Batuak, 2015), beraz erabat onartua eta hedatua dago .

Hala ere, horrek ez du esan nahi UNESCOk edo nazioarteko beste erakunde batzuek garapen iraunkorrerako hezkuntza terminoa agertu baino lehen erabiltzen ziren beste kontzeptu batzuk baztertzen dituztenik, hala nola, 'ingurumen-hezkuntza'. Aitzitik, kontzeptu guztien artean, "Garapen Iraunkorrerako hezkuntza" lehenetsi dute, erakunde-hizkeran eta nazioarteko agendan.

Eztabaida kontzeptual horretan, kontzeptuaren alderdi semantikoari eta hitz bat edo bestea erabiltzeak ekar dezakeenari ere erreparatzen diogu gaztelaniaz: 'iraunkortasunerako' hezkuntza (*Educacion para la sostenibilidad*) edo hezkuntza 'iraunkortasuneranz' (*Educación hacia la sostenibilidad*), bien arteko eztabaida sortu da. Lehenik eta behin, 'rako' horrek, bizimodu iraunkorrerako ekintza sortuko duen hezkuntza, iraunkortasunari men egingo diona adierazten du. Bestalde, " iraunkortasunerantzako hezkuntza" kontzeptua "etorkizuna" terminoarekin lotuta egongo litzateke, iraunkortasunerantz abiatzeko ezagutza garatzea helburu dela interpreta daitekeena.

Ingelesez *about* eta *for* bereizten dira, hau da, garapen iraunkorrari buruzko hezkuntza eta garapen iraunkorrerako hezkuntza. *Education about sustainable development,* hau

da, Garapen iraunkorrari buruz (*about*) hezteak ingurumen-kontzientzia edo eztabaida teorikoa garatzea eta sentikortzea eskatzen ditu. Garapen iraunkorrerako hezteak, gaztelaniaz bezala, hezkuntza iraunkortasuna lortzeko tresna gisa aipatzen du. Azken ideia hori aukeratu da, GIHE iraunkortasunean aurrera egiteko inplementazio-tresna gisa sortu baitzen. Garapen iraunkorrari buruzko irakaskuntza GIHEren zati integrala da; hala ere, zati txiki bat baino ez da, GIHren helburua iraunkortasuna praktika demokratikoen bidez lortzea delako, eta horrek gizarte informatu bat inplikatzen du (Mckeown & Hopkins, 2003). Ingelesez, *Education for a sustainable living* kontzeptua ere bereiz daiteke, *Education for sustainability* kontzeptuaren inplikazio bera izan zezakeena, bizitza-eredu jasangarri baterako herritartasuna eta gizartea bilatuz.

Euskaraz, hizkuntzaren beraren semantika dela eta, ez da eztabaida hori sortzen, baina bai kontzeptualizazio batzuen artean. Adibidez, "jasangarritasuna" edo "iraunkortasuna" hitzak sinonimoak dira, biak ala biak iraunkortasunari buruzkoak. Eusko Jaurlaritza eta, horregatik, Ingurugela bezalako talde lanek "jasangarritasuna" erabiltzea erabaki dute. Ikerketa honetan, "iraunkortasuna" egokiagoa dela uste dugu, euskaraz iraunkorra delako irauteko gaitasuna duena. Bestalde, euskaraz "iraunkortasunerako heztea" ere "jasangarritasunerako hezi" bezala aurki dezakegu, Ingurugelak Eskolako Agenda 21en 'titulu' gisa erabiltzen baita kontzeptu hori.

Bestalde, 'Garapen iraunkorrak' izan ditzakeen ondorioak ikusita, Ingurumen hezkuntzaren kontzeptua sistema ekonomiko hegemonikoa zalantzan ez jartzeko modu bat izan daiteke. (Jicking and Wals 2008).

Lerro honetan Ingurumen eta Iraunkortasunerako Hezkuntza (ESE inglesezko siglengatik) terminoa erabiliko dugu, bi ideiak bateratzeko ere erabiltzen hasten dena. Gainera, beharrezkotzat jotzen dugu 'iraunkortasunerako ikasten' (*Learning for Sustainability)* bezalako beste kontzeptu batzuen ekarpena izatea:

> *"LfS offers a holistic pedagogical approach that seeks to build the values, skills and knowledge necessary to develop practices within schools, communities and, at governance levels within teacher education, accord with the collective aim of taking action for a sustainable future"* (Higgins & Christie, 2018, pg. 554)

Termino horrek Iraunkortasunerako ikasten (*Learning for Sustainability* terminoak) *Sustainable Development* −Garapen Iraunkorra, *Global Citizenship Education*−Herritartasun Globalerako Hezkuntza eta *Outdoor Learning*−Aire zabalean ikaskuntza− barne hartzen ditu, hurrengo helburuarekin: *"a whole school approach that enables the school and its mider community to build de values, attitudes, knoledge, skills and confidence needed to develop practices and take decisions which are compatible with a sustainable and more equitable future"* (Higgins and Christie 2018).

Beste aldetik, gure ikerketa honetan jorratu dugun analisia beste korronte batzuek ere elikatzen dute, hala nola ekofeminismoak eta hezkuntza ekosozialak. Ekofeminismoak bi pentsamendu kritikotatik (feminismoa eta ekologismoa) ematen digu aukera gizarte patriarkalaren sexismoari aurre egiteko, eta, aldi berean, natura menderatzearen *subtextu* androzentrikoa aurkitu eta salatzeko; ekofeminismoa da gai horri bere bi alderdietan heltzen dion pentsamendua eta praxia (feminismoa/ekologismoa) (Puleo, 2013, Mellor, 1997). Iraunkortasuneranzko hezkuntzaren helburua balioetan oinarritutako hezkuntza sustatzea da (Agirreazkuenaga, 2020), hainbat gizarte-gai integratu ahal izateko. Horretan, ekofeminismoa erreferentea izan daiteke, gida posible bat eskainiz.

Azkenik, azpimarratu nahi dugu kontzeptu guztiek tokian-tokian funtzionatu behar dutela, eta horren adierazgarritasuna tokiko testuinguruaren araberakoa izan behar duela; hau da, garrantzitsuena tokian-tokian ulertzea eta erabiltzea dela.

4. IKERKETAREN TESTUINGURUA

4.1 Euskal Autonomia Erkidegoa eta Iraunkortasunerako Hezkuntza

Euskal Autonomia Erkidegoa (EAE) 2,17 milioi biztanleko lurraldea da (Eustat, 2020), eta horrek esan nahi du km2 bakoitzeko 300 biztanleko dentsitatea duela. Oso urbanizatuta dagoen lurraldea izan arren, ingurune naturalarekin lotuta dagoen kultura du ezaugarri, eta, beraz, bi alderdi horiek potentzialtasun handia dute lurraldean, iraunkortasunerako trantsizioan sartzeko elementu gisa. Hezkuntza arloari dagokionez, EAEk, Espainiako Estatuaren beste erkidego autonomoek bezala, Hezkuntzaren eskumenak ditu (besteak beste), eta, beraz, EAEko ikastetxeen Iraunkortasunerako Hezkuntza, Eusko Jaurlaritzatik zuzentzen da.

EAE-n burutzen ari diren iraunkortasunerako hezkuntza politikak nazioartean ezarritako printzipioetan oinarritzen dira. Adibidez, mundu mailan ingurumen-hezkuntzari buruz hitz egiten hasi zen goi-bilera aitzindaria Tibilisen egin zen 1977an, 1992ko Rioko goi-bilerak jarraituta. Bertan, gizarte zibilaren, administrazioen, gobernuen eta nazioarteko ordezkarien eskaeraren ondoren, Tokiko Agenda 21 definitu zuten honen helburua agenda inplementatzen den herrialdearen jasangarritasunerantz inplikatu eta ekintzak egitea da, planetaren ongizate globalerantz bideratuta helburu orokor bezala izanik. Horrela sortu zen orain ezagutzen den *Think global, act local* edo 'Globalki pentsatu, tokian ekin' adierazpena. Esaldi honen 'jatorria' Geddeseri (Ingurugela 2016) lotzen zaio, bere lanean zeharka aipatzen duen idea izanik. Tokiko udaletan indarrean dagoen Agenda 21 horretatik, Eskolako Agenda 21, lan osagarri gisa definitzen da: Agendara atxikitako herrietako eskoletan gauzatzeko edo mundu jasangarriago baterako Tokiko agenda 21arekin konprometituta, udalerri jasangarriago batetik hasiz. Beraz, Eskolako Agenda 21 nazioarteko Tokiko Agenda 21ean oinarrituta dago.

Nazioarteko testuinguru horretan, 1990ean lehen Ingurugiroarekiko Irakasbideen Hezkuntza eta Ikerketarako Ikastegiak (CEIDA) sortu ziren EAEn. CEIDA izeneko zentro hauek Ingurugiro Heziketarentzako laguntza zentroak dira, irakaslego ez-unibertsitarioari zuzenduak batez ere, Eusko Jaurlaritzako Heziketa, Unibertsitate eta Ikerkuntza Sailaren eta Hirigintza, Etxebizitza eta Ingurugiro Sailaren artean sinatutako

hitzarmen baten bidez sortuak (Eusko Jaurlaritza, 1989). Beranduago, 2005ean, CEIDA zentruek Ingurugela izena hartuko dute.

Eskolako Agenda 21 2003an EAEn hasi zen ezartzen, eta EAEko ikastetxeetako ingurumen-hezkuntzaren bizkarrezurra bihurtu zen, Ingurugelako aholkularien laguntzarekin. Era berean, gizarte zibiletik, gobernuz kanpoko erakundeetatik, talde ekologistetatik edo beste batzuetatik sortu diren beste hainbat ekimen ere badaude ildo horretan. Gaur egun, Eskolako Agenda 21etik Agenda 2030era aldatzeko hausnarketa egiten ari dira bai erakunde publikoak bai gizarte zibileko aktoreak, bere ikuspegi integrala eta holistikoa ardatz hartuta.

Prozesu hori bat dator 2030erako EAEko *Jasangarritasunerako Hezkuntzarako Plan Estrategikoa*rekin, non 4 helburu espezifiko zehazten diren (Eusko Jaurlaritza, 2016):

1. Ekintzarako hezkuntza.
2. Hezitzaileen, prestatzaileen eta aldaketarako beste eragile batzuen gaitasuna indartzea.
3. Gazteen gaikuntza eta ahalduntzea.
4. Hiriak eta herriak sustatzea, iraunkortasunerako ingurune hezitzaile gisa.

Estrategia hori bat dator, batetik, "Eusko Jaurlaritzaren Ingurumen Estrategia 2020" delakoarekin, Garapen Jasangarriko Helburuen nazioarteko agendan (2015-2030) oinarritua, eta, bestetik, UNESCOren Garapen Jasangarrirako Hezkuntzari buruzko *Global Action Plan* programa espezifikoarekin.

Ikerketa honetan Ingurugela erakunde publikoa hartzen dugu EAEko ingurumen-hezkuntzaren erreferentetzat, zehaztutako helburuak ildo izanik, nahiz eta hainbat erakundetan gai honetan ere lan egiten den. Ingurugela izeneko zentroak irakasleei laguntzeko egiturak dira, unibertsitatez kanpoko hezkuntza-sistemako ikastetxeetan jasangarritasunerako hezkuntza bultzatzeko. 1990ean sortu ziren Eusko Jaurlaritzako Ingurumen Sailetik eta Hezkuntza Sailetik, administrazio publikoak ingurumen-hezkuntzari buruzko aholkularitza emateko eta hori garatzeko beharra identifikatu ondoren. Gaur egun 5 bulegok osatzen dute Ingurugela Sarea, Bilbon, Gasteizen,

Donostian, Eibarren eta Legazpin, 15 irakaslerekin (12 aholkulari, 2 laguntzaile, dokumentalista 1). Ingurugela Ingurumen eta Lurralde Politika Sailaren eta Eusko Jaurlaritzako Hezkuntza, Hezkuntza Politika eta Kultura Sailaren mende dago. Egitura hurrengo eskeman agertzen dena da:
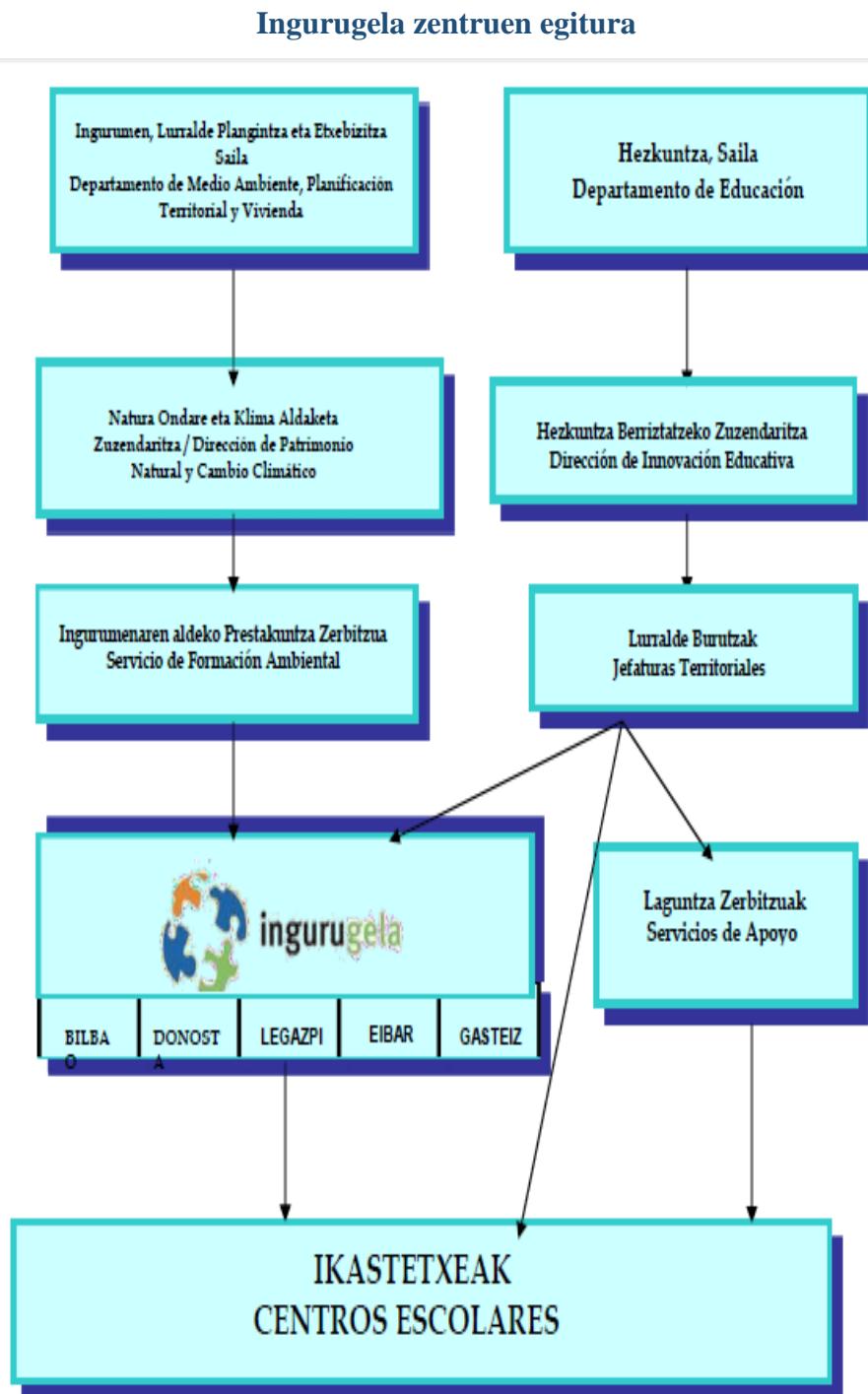
Ingurugela zentruen egitura

Irudia 6: Inguruglea zentruen egitura **(Ingurugela 2016)**.

Ingurugelen urteko lana Hezkuntza, Unibertsitate eta Ikerketa Sailak eta Ingurumen eta Lurralde Antolamendu Sailak 1998ko ekainaren 22ko Aginduaren bidez (urriaren 1eko EHAA) sinatu eta onartutako Ingurumen Hezkuntzako Programa oinarri hartuta definitzen da. Ikastetxeen lehentasunezko lan-ildoak honako hauek dira:

- Ikerketa eta esperimentazioa: ildo honen helburu nagusia ingurumen-hezkuntzan berrikuntza bultzatzea da, proiektuak sustatuz, baliabideak eskainiz eta ikastetxeekin lankidetzan ikertuz.

- Irakasleen prestakuntza: irakaskuntza-jarduera eguneratzeko eta irakaskuntza-ikaskuntzako prozesuak hobetzeko, beharrezkoa da analisi kritikoa egitea eta banakako talde-prestakuntza eta proiektuei lotutako prestakuntza ematea.

- Material didaktikoak egitea eta zabaltzea

- Sentsibilizazioa: ingurumen-arazoak ezagutzea, kontzientzia hartzea eta ingurunearen gaineko kezka eta zaintza piztea.

4.2 Eskolako Agenda 21 eta eskola iraunkorrak edo jasangarriak

Eskolako Agenda 21 (EA21) garapen jasangarrirako hezkuntza-programa bat da. Ingurugela zentroen "Ikerketa eta esperimentazioa" lan-ildoaren barruan zehazten da. Programa 2003-2004 ikasturtean hasi zen eta hiru helburu nagusi zehatz ditu:

- Ikastetxeko eta inguruko baliabideen kudeaketa jasangarria egitea.

- Curriculumaren berrikuntza sustatzea.

- Parte-hartzearen kultura sustatzea.

Programa honetan parte hartzen duten erakundeak ikastetxeak dira lehenik eta behin, udalekin batera. Ikastetxeen barruan, programaren antolaketa honela egituratzen da (2. irudia):

- Koordinatzailearen ardura izango da proiektua bideratzea eta gidatzea.

- Irakasle- eta kudeaketa-pertsonek osatuko dute laguntza-taldea, eta proiektua antolatzen lagunduko dute.

- Ingurumen-batzordea hezkuntza-komunitatearentzat partaidetza-gune bat da. Interesa duten pertsonak ordezkatuta daude eta programaren ildo nagusiak erabakitzen dituzte (plangintza, ekintza-plana, ebaluazioa...).
- Eskualdeko koordinazio-bilerak, ikastetxeen arteko lankidetza espazioak dira. Eskoletako koordinatzaileak, batzuetan, tokiko ingurumen-teknikariarekin eta Ingurugelaren aholkulariarekin biltzen dira.

Tokiko eta Eskola Agenda 21aren antolaketa EAEn
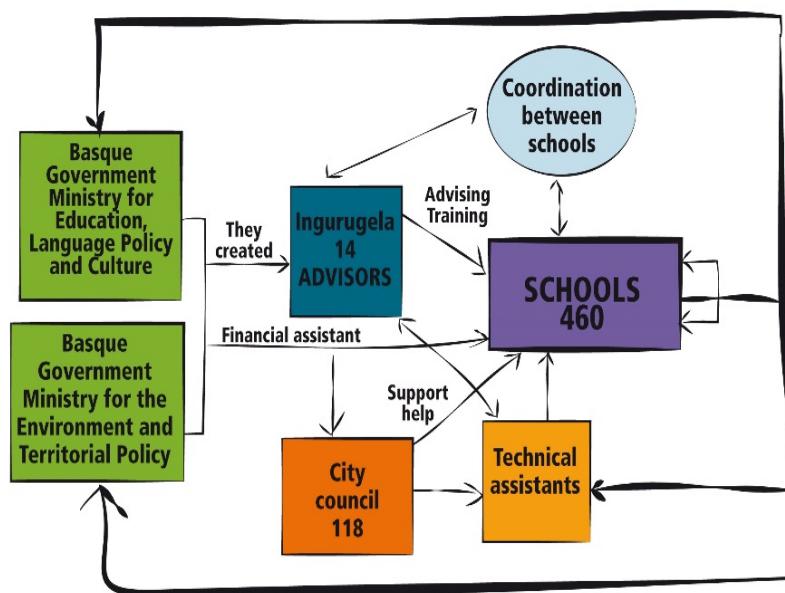
7. irudia: Tokiko eta Eskola Agenda 21aren antolaketa EAEn (Ingurugela 2016).

Bestalde, ebaluaketa sistema bat definitzen da iraunkortasunerako hezkuntzan garatutako esperientzien kalitatea neurtzeko. "Kalitate irizpide batzuen arabera, ebaluaketan sartzen diren ikastetxeek, neurri minimo batzuk gaindituz gero, 'Eskola jasangarria' agiria jasoko dute" *(*Guzmán eta Gutiérrez 2009); hau da, Eskolako Agenda 21 programan nabarmentzen diren esperientziak goraipatzea da helburu. Izan ere, Eskola Agenda 21 programaren helburua da ikastetxea bera iraunkortasunaren bidean jartzea eta horrela bertako hezkuntza kalitatezko ildoan errekonozimendu berezia ematea eta indartzea.

Ebaluazio honetara aurkezteko, ikastetxeek gutxienez 5 urte egon behar dira EA21 proiektuan. Ziurtagiria jaso ondoren, lau urterik behin, berrikusketa bat egin behar dute

ziurtagiria berrizteko. Ebaluazioa burutzeko, Iraunkortasunerako hezkuntzako esperientzien kalitatea neurtzeko ebaluaketa sistema honetan oinarritzen da (Guzmán eta Gutiérrez, 2009):

- Adierazleen sistema bat.
- Auto-ebaluazioa eta ebidentzien dokumentazio, auto-erregulazioa izanik helburua
- Auditoria.

2018-2019ko ikasturtean, 443 ikastetxek parte hartu dute EA21ean, gutxi gorabehera erkidegoko ikastetxe guztien % 60a. Eta udalen artean 119 izan dira parte hartu dutenak. Horietatik 104 ikastetxek dute eskola iraunkorra edo jasangarriaren ziurtagiria. 18 ikastetxek aurkeztu diote sistemari berrikuntza lortzeko aintzatespena aurtengo ikasturtean (6 publiko eta 12 itunpeko), eta 5 ikastetxe berri aurkeztu dira lehen aldiz (1 publiko eta 4 itunpeko) (Ingurugela 2019a).

4.3   Eskola Agenda 21eko ebaluazio tresna

Eskola Agenda 21 ebaluatzeko tresna 2006-2007 ikasturtean sortu eta erabiltzen hasi zen, urtero programa hobetzeko behar den informazioa lortzeko. Tresna hori bera da ordutik, 2015ean egin ziren aldaketa txiki batzuekin. Eskolako Agenda 21 Programaren Ebaluazioa (2003-2006) izeneko azterlana egin zuen lantaldeak diseinatu zuen galdetegia. Inkesta hori, eskola-urtea amaitu baino lehen, programan parte hartzen duten ikastetxeetako Eskola Agenda 21eko koordinatzaile guztiei bidaltzen zaie. Nahitaez erantzun behar zaio, egindako lana erakusteko modua delako, eta, horrela, zehaztutako jarduerak gauzatzeko lortutako finantzaketa justifikatzeko.

Eskolako Agenda 21 nazioarteko Tokiko Agenda 21ean oinarrituta dago. Eragin hori bisualki erakusten da inkestan, non eskolako agenda 21eko logotipoa ikus baitaiteke, hari erreferentzia bisuala eginez. Bestalde, jarduera hori Ingurugela zentroen lanaren parte ere bada. Interesgarria da zentro hauen logotipoa ikustea, Lurra planeta aipatzen duten buruhausgarriz osatuta dagoena. Lan globala da, tokiko lana zerbait globalaren barruan kokatuz.

Inkestaren galderak lau ataletan banatuta dago, programaren atal eta faseei erantzuteko. Lehenik eta behin, eskolaren eta koordinatzailearen profilaren dataren bat behar da. Ondoren, atalak honela banatzen dira:

I. atala: eskola-agenda 21eko programaren faseak garatzea: 1. fasea: antolaketa eta plangintza; 2. fasea: motibazioa eta kontzientzia; 3. fasea: diagnostikoa; 4. fasea: ekintza-plana; fasearen komunikazioa

II. atala: Eskola Agenda 21eko programaren eragina eskolan.

III. atala: Eskola Agenda 21eko programarekiko gogobetetzea

IV. atala: eskola-agenda 21en eta tokiko agenda 21en arteko sinergia/udalerriaren iraunkortasuna.

Banaketa horrek programaren atzean dagoena azkar ulertzen laguntzen du. Garrantzitsua da kontuan hartzea programaren plangintzaren faseak direla proiektuaren inplementazioaren muina. Gainera, programa honek eskolen dinamikari nola forma ematen dion ikustea ere bada helburua, ikasketa-planaren kudeaketari eta ulermenari dagokienez. Azkenik, inkesta honen bidez, eskola dagoen udalean lan egiten duten tokiko agintariekiko konpromisoa nolakoa den ikusi nahi dute, Tokiko Agenda 21en bidez.

Itemei dagokienez, inkestak guztira 302 item ditu (1. taula), 56 galderatan banatuta. Galderetako 12 eskolako datuak biltzeari buruzkoak dira, I. atalaren aurretik (ikus galdetegi osoa erantsitako gehigarrian). Kodetzean, 56 galdera nagusi horiek 107 gisa aztertuko dira, azpigaldera batzuk bereizita kodetu behar direlako. Zatitutako atalari begiratuta, lehenengoa da garrantzi handiena duena, elementuen erdiak baino gehiago baititu, baita galderak ere. Garrantzi handia ematen zaio eskolan egindako programari buruzko datuak lortzeari. Hori zentzuzkoa da, kontuan hartuta arrazoi nagusietako bat eskola bakoitzak proiektua garatzeko, jasotzen duen laguntza finantzarioa, justifikatzea dela. Eta inkesta honen bidez azaldu ditzake jarduerak. Elementu bakoitza kodetzen dira, ez galdera bakoitza; izan ere, eskaintzen diren aukerak, galdera bakoitzaren ikuspegia eta galdetegiaren aukera ezagutu behar dira, ikuspegia ulertzeko. Adibidez, galdera berean hainbat aukera egon daitezke aukeratzeko, han gauza batean edo bestean agertzen diren adierazpenen eta aukeren arabera, buruan zer duten jakin dezakegu.

5. METODOLOGIA

Ikerketa baten helburuen arabera metodologia mota bat edo bestea aukeratzen da. Lan honen bidea, iraunkortasunaren hezkuntzan adituak diren eragile gakoekin elkartu eta elkarrizketa informalak izanda definitu egin da: Ingurugelakide, akademiko zein inplementazioan jarduten dutenekin hain zuzen ere. Izan ere, ikerketaren azken helburua maila akademikoan eta praktikoan ekarpena egitea da.

Gizarte zientzietan, bi ikuspegi metodologiko garatu dira (Taylor & Bogdan, 1984). Alde batetik, positibismoaren perspektiba daukagu, hau da, gizabanakoen egitateak edo ekintzak aztertzea, subjektibotasuna edo balio-eskala alde batera utzita, egitateen eta egitate horiek sortzen dituzten eragileen artean bereizketa bat balego bezala. Positibistek erabilitako metodoen artean, galdetegi itxia eta ikerketa demografikoak ditugu. Bestalde, ikuspegi teoriko-fenomenologikoa dago, jatorri filosofiko eta soziologikoa duena (Berger & Luckman, 1967): fenomenologiak gertakari sozialak pertsonaren ikuspuntutik ulertu nahi ditu. Azken ikuspegi hori erabiltzen dutenek, metodo kualitatiboak aplikatzen dituzte, hala nola behaketa, elkarrizketa sakonak eta datu deskribatzaileak sortzen dituzten eta, aldi berean, parte-hartze aktiboa sustatzen duten beste tresna batzuk, hau da, hurbilketa etnografikoa. Beraz, fenomenologikoek gizabanako bakoitzaren ekintzen atzean dauden arrazoiak eta sinesmenak ulertu nahi dituzte (Taylor & Bogdan, 1984).

Aztertutako azterketa-kasuen bidez helburu espezifikoak lortzeko, batez ere metodologia kualitatiboa erabili dugu, hau da, ″datu deskribatzaileak sortzen dituen metodologia: pertsonen hitzengatik, ahozkoak zein idatzizkoak, eta beha daitekeen jokabidea″ (Taylor & Bogdan, 1984, 20. or.). Praktika kualitatiboen bidez egiazta daiteke aztertutako objektua subjektu-talde bat dela eta subjektu bakoitza mugimenduan dagoela ―Gizarte-zientzietako ikertzailea barne (Alonso, 1998). Horregatik, beharrezkoa da subjektu horiek sortutako bidea berreraikitzea eta interpretatzea. Erabilitako tresnak hauek izan dira: elkarrizketa sakonak, elkarrizketa erdi-egituratuak, eztabaida-taldeak, behaketa eta dokumentazioaren analisia. Hurrengo ataletan zehaztasunez azalduko ditugu.

5.1 Azterketa kontzeptuala

Lehenik eta behin, hezkuntzari buruzko ikerketa abiatzeko (1go helburua) erabiliko ditugun kontzeptuak argitu behar ditugu: Noiz sortu dira eta nola erabili izan ohi dira eta zelako bilakaera izan duten, ikerketako ikuspegia garatzeko aurrekariak izan ahal izateko. Sterling (2004) eta McKeown eta Hopkinsen (2003) lanetan oinarritzen gara, gaiari buruzko erreferentzia-egile gisa. Gainera, Nazio Batuen testuinguruan izandako nazioarteko gertaera kronologikoek 1960ko hamarkadako gailurretik 1990eko hamarkadako Lurraren gailurrera arte gidatzen gaituzte, eztabaidarako garrantzitsuak diren beste erreferentzia batzuen garapenarekin batera.

Nazioarteko 2030 Agendaren esparruan hezkuntzaren barruan zer norabide hartu behar dugun ikertzeko galderei erantzuteko, erreferentzia gisa hartzen dira Iraunkortasunerako Ikaskuntza (*Learning for Sustainability*) (Christie, 2017) eta Hezkuntza Jasangarria (*Sustainable Education*) (Sterling, 2004) ikuspegiak. Datu-base akademiko handienetan (Web of Science, Scopus) 2000-2019 tarterako bilaketa bibliografikoa egin ondoren hartzen dira kontuan erabiliko diren hitzak. Bilaketa hori bideratu zuten ondorengo hitz gakoak: "ingurumen-hezkuntza", "garapen jasangarrirako hezkuntza" (*Education for sustainable development*), "iraunkortasunerako hezkuntza" (*Education for sustainability*), "iraunkortasunerako ikasten" (*Learning for sustainability*) eta "Iraunkortasunerako Hezkuntza edo hezkuntza jasangarria" (*Sustainable education*). Azken bi kontzeptu horiek dira argitalpen gutxien dituztenak; hala ere, Agenda 2030en garairako azaleratzen ari diren kontzeptuak dira, ikuspegi integrala dutelako. Horregatik hain zuzen ere erreferentziatzat hartu ditugu. Orduan, hipotesia frogatzeko, argitalpen nagusien edukiaren azterketa egin dugu. Kontzeptu horiei dagokienez, gainera, horietatik eratorritako beste kontzeptu batzuk ere kontuan hartu ditugu aztergai.

5.2. Irakasleen pertzepzioa aztertzen; sakoneko elkarrizketa eta behaketa

Sakoneko elkarrizketak (banakakoak) irakasleen ikuspegia lortzeko eta aztertzeko tresna nagusi gisa aukeratu ditugu; izan ere, gure laginketa kualitatiboak "ez du ordezkaritza estatistikoa lortu nahi, baizik eta ikerketaren helburuei dagokien ordezkaritza tipologikoa, sozioestrukturala" (Valle, 2007, 68. or.). Elkarrizketak diseinatzeko, Wengrafek proposatzen dituen erabakien eskema erabili genuen, honako urrats hauek

barne hartuta: 1) ikerketako helburuak eta galdera nagusiak zehaztea (PCI); 2) Galdera nagusi bakoitzaren itzulpena hiru eta zazpi galdera teoriko artean (PT); 3) Elkarrizketa-galderen multzoak garatzea (PE) edo elkarrizketa-esku-hartzeak (Ie) galdera teoriko bakoitzerako, elkarrizketatu edo informatzaile mota kontuan hartuta (era berean, 2. puntua egiteko, Kvalek proposatutako eskema hartu genuen erreferentziatzat (1996, 131. or.) (1. eranskina).

Kvalen tresna horri jarraituz, **2. helburu espezifikoa** betetzeko, behin betiko galdetegia diseinatu genuen. Guztira 38 elkarrizketa egin dizkiegu EAEko 5 ikastetxetako bigarren hezkuntzako irakasleei. Elkarrizketatutako profilak ezagutzaren hainbat arlotakoak dira, bai eta hainbat urtetako esperientzia ere sektorean edo azterlanaren azterketan. Azterketa irakasleen ikuspegitik egitea erabaki genuen, irudi hori ezinbestekoa dela uste dugulako, iraunkortasunerako hezkuntzaren zuzendaritzan rol erabakigarria baitu.

Era berean, elkarrizketetan lortutako datuak osatzeko eta zentroaren errealitatea ulertzeko, zehaztutako ikerketa-helburuari dagokionez, metodologia etnografikoa erabili genuen. Etnografiak barne hartzen ditu errealitatea, holistikoki ulertzen duten metodo kualitatiboak: errutina sozialen behaketa, elkarrizketa formal eta informalak, edo dokumentuen eta objektuen analisia (Lindorf & Taylor, 2002, 17. or.), ikastetxeko EA21en jarduerei buruzko urteko memoriak, Ingurugela zentroaren memoriak, besteak beste. Gainera, ikerketaren "informatzaileak" eta haien "ekintza nagusien" espazioa kontuan hartzen du metodologia etnografikoak: *"it means understanding the perspectives and problematising the accounts of organisational actors, spatial and temporal, and exploring their local and translocal contexts"* (Garsten, 2010, 66. or.). Aztertutako zentroetara egindako bisitetan, behaketak eta elkarrizketa informalak egin genituen, landa-koadernoan sistematizatuta. Halaber, espazio informaletan ideiak trukatzeko aukerak sortu ziren, hala nola, irakasleek eta ikasleek gaiaren inguruan urtero egiten dituzten bilera eta biltzarretan, eta horrek aukera eman zigun datuak eta informazioa elkartrukatzeko inplikatutako hainbat iturri eta eragilerekin.

5.3 Ikasleen pertzepzioa aztertzeko metodologia

Ikasleen pertzepzioa aztertzeko erabili ditugun tresnak eztabaida-taldeak eta landa-egunkari baten bidezko behaketa izan dira, ikastetxeetara egindako bisitetan. Landa-azterketa hori 2019ko urtarriletik ekainera bitartean egin da.

Lehen topaketa eta eztabaida-taldea ikerketa-galdera nagusiek gidatu zituzten. Ondoren, diseinatutako dinamikarekin jarraitu genuen, *Golden Circle* erreferentziatzat hartuta (II. eranskina) (Sinek, 2015). Tresna honen helburua ekintza jakin batzuk egitearen arrazoiaz eta zentzuaz sakontzea eta hausnartzea da. Ikerketa honen testuinguru espezifikoan, helburua da eztabaida eta hausnarketa sortzea puntu garrantzitsu nagusiei buruz, ikertutako subjektuen ikuspegitik, iraunkortasunerako hezkuntzari dagokionez. Dinamika horren ondoren, jasotako informazioa partekatu genuen taldearen artean (ikertzailea eta ikasleak), eta ibilbide-orri bat diseinatu genuen. Ibilbide horri hori ikasleek izango zuten tresna da (III.eranskina), gida gisa erabili zutena eskolan eta familian behatzeko eta aztertzeko gaiekin. Horrela, ikasleen inplikazio zuzena ere bilatu genuen, ikerketaren partaide aktibo bihurtuz: *'ways which are democratic, open, ethical, and involve people rather than do research simply 'on'others'* (Posch 1996).

Ibilbide-orria lortu eta aste batzuetara, bigarren bilera bat egin genuen. Eztabaida-talde baten bidez, ikasleen informazioa eta datuak lortu genituen, haien familia- eta eskola-inguruneari dagokionez. Eztabaida-taldeen bidezko ikerketa-prozesua koherentea izan zen prozesuan dauden subjektuengatik (Ibañez, 2015), eta, beraz, tresna metodologiko hori egokitzat jo genuen ikerketaren galderei eta helburuei erantzuteko.

Guztira 8 topaketa egin genituen, 4 ikasle-talderenak. Talde bakoitzean bigarren hezkuntzako 6 eta 10 ikasle artean zeuden, maila desberdinetakoak (12 eta 16 urte bitartekoak). Lehen azaldu bezala, lehenengo topaketan eztabaida- eta dinamika-taldeak osatu ziren, ikasleek ikerketa-gida gisa geroago erabiliko zuten ibilbide-orria sortzeko. eta bigarren topaketan lortutako emaitzak eztabaida-taldean partekatzeko (ibilbide-orrian zehaztutakoa behatuz eta aztertuz).

Halaber, eztabaida-taldeek lortutako datuen osagarri gisa, eta zentroaren errealitatea ulertzeko, zehaztutako ikerketa-helburuei dagokienez, metodologia etnografikoak ere erabili genituen.

5.4 Laginaren diseinua

Laginketa egiteko eta ikasketa-kasuak aukeratzeko, 'Eskola Jasangarriak' ziurtagiria daukaten ikastetxeak hartu genituen, EA21en proiektuan sartzen diren jardueren nolabaiteko inplikazioa eta gauzatze-maila bermatzeko (Martínez et. al., 2017).

Ikastetxe horiek urtero gai bat lantzen dute eta horren inguruan dagozkion jarduerak diseinatu eta egiten dituzte. Adibidez, urteko gaia klima-aldaketa, hondakinak eta ekonomia zirkularra izan daiteke, besteak beste, eta ardatz nagusi horretan oinarrituta diseinatzen dira ikasturtean zehar egin beharreko jarduerak.

Ondoren azalduko ditugu azterketa egin den zentroen profilak baina beren izena edo udalerria aipatu gabe, hezkuntza zentruek horrela eskatu zigutelako:

- A zentroa: historikoki industria- eta arrantza-eremu batean dagoen institutu publikoa da, 46.000 biztanle ingurukoa, 6,8 biztanle km karratuko dituena. 464 ikasle eta 57 irakasle daude bertan. Ikastetxe horretan, 2004tik ari dira Eskolako Agenda 21ekin lanean, eta 2000tik aurrera Eskola Iraunkor gisa ziurtagiriak lortu dituzte (4 urtean behin eguneratuta).

- B zentroa: erdilanda-eremutzat jotzen den udalerrian kokatutako institutu publikoa da, eta 3.753 biztanle ditu. Eskolako Agenda 21ek udalarekin duen lotura oso gertukoa da, herriko institutu bakarra baita. Institutuak DBHko lehen mailatik (Derrigorrezko Bigarren Hezkuntza) Batxilergoko bigarren mailara arteko eskolak eskaintzen ditu, baita lanbide heziketako ikastaroak ere. 2016-2017 ikasturteko datuen arabera, institutuak 440 ikasle eta 60 irakasle hartu ditu. Ingurugelarekin batera, Eskolako Agenda 21 proiektuan sartuta daude 2001etik, eta Eskola Iraunkorraren ziurtagiria lortu zuten 2010ean, 2018an berrituta.

- C zentroa: erdilanda-eremu batean kokatutako zentro itundua da, gutxi gorabehera 2.400 biztanle dituen udalerrian, 14,9 km²-tan. Ikastetxe honek 3

urtetik hasi eta batxilergoko bigarren mailara arteko eskolak eskaintzen ditu, 1964 ikasle eta 167 langile ditu. Eskolako A21 proiektua 2007az geroztik gauzatzen da ikastetxean, eta 2016an lortu zuten lehen aldiz eskola iraunkorraren aitorpena. Ikasleak, udalerritik ez ezik, inguru guztietatik ere etortzen dira, eta maila sozioekonomiko ertain/altuko ikasleen profila dute.

- D zentroa: kostaldeko arrantza-udalerrian dagoen itunpeko zentroa da, ia 17.000 biztanle ditu eta 34,1 km²-ko azalera du. 3 urtetik DBHko 4. mailara arteko eskolak eskaintzen ditu, 950 ikasle eta 95 irakasle ditu. Eskolako A21 proiektua 2007tik ari da gauzatzen ikastetxean. Eskola iraunkorraren aitorpena jaso zuten 2014an. Ikastetxe honetako ikasle gehienak udalerri berekoak dira, eta, beraz, lotura zuzena dute herriarekin tokiko A21ari dagokionez.

- E zentroa: 243.918 biztanle eta 276,8 km² -ko azalera duen udalerri batean kokatutako zentro itundua da. 3 urtetik batxilergoko bigarren mailara arteko eskolak eskaintzen ditu, 1350 ikasle eta 95 irakasle ditu. Eskolako A21 proiektua 2007az geroztik gauzatzen da ikastetxean. 2009-2010 urtean eskola jasangarriaren lehen aintzatespena lortu zuen, eta 2017-18 ikasturtean datozen 4 urteetarako berritu diote.

Ikasleen talde parte-hartzaileak irizpide batzuk kontutan hartuz eta ikastetxeetako EA21eko koordinatzaileen laguntzarekin aukeratu genituen, ikertzailearen eta koordinatzailearen artean. Bigarren Hezkuntzako lau mailetako partaidetza lortu ahal izateko, kurtso bakoitzeko 2 pertsona hautatu genituen parte-hartzaile gisa.

Gainera, talde bakoitzeko gutxienez pertsona batek parte hartu zuen edo parte hartzen du gaur eguneko-ordezkari gisa, hau da, EA21en proiektuak lankideei helarazteaz arduratzen da. Azterlan honen helburua une jakin batean ingurumen-hezkuntzari buruzko jarrerak eta pertzepzioa ezagutzea izan baita. Ikerketan zehar ikasleen portaeran aldaketak egon dira, baina horiek ez ditugu neurtu, hori egitea ez baitzen ikerketaren helburua.

5.5 Ebaluazio tresnen analisia

Iraunkortasuna eta hezkuntza kontzeptu konplexuak dira, ulerkera eta ikuspegi holistikoa behar dute benetako aldaketarako. Etorkizun jasangarri baterantz eraldatzeko, aldaketa sistemikoa behar da: pertsona bakoitzaren aldaketen bidez, baina beharrezkoagoa da politiken aldaketaren bidezkoa ere izan dadila eraldaketa (Peterson, 2016). Horregatik, erronkei aurre egiteko, hori ezartzen ari diren politika guztiei buruzko informazioa eta ikerketak behar ditugu. Nola jorratzen dituzte politika horiek administrazio publikoek? Harago begiratu behar dugu, irudi osoa ikusteko, urrundu egin behar dugu eta administrazioak iraunkortasunari dagokionez, nola pentsatzen duen esaten diguten informazio eta tresna motak identifikatu behar ditugu. Horretarako, "Erakunde-Kultura" antolaketari buruzko Scheinen eredua hartu dugu ardatz. Gure kasuan ingurugelak urtero egiten duen inkesta , tresnatzat edo *artefaktutzat* hartuz gero eta aztertuz, lortuko genuke delako "Erakunde-Kultura" ezagutzea.

5.5.1 Zer da erakunde-kultura?

Pertsona talde batek, usteak partekatzean dakarren prestakuntza kulturalaren maila bat garatu duenean, horrek taldearen portaera eta arauak zehazten ditu (Schein, 1983). Delako kulturak edo jakintza "inmaterialak" erakunde edo talde batean gertatzen denari buruz, itxuraz ulertezinak diren alderdi batzuk, argitzen laguntzen du.

Partekatutako historia luzea duten talde eta erakundeek, kultura edo jakintza komuna gara dezakete; hau da, azaleko adierazpen behagarriak baino askoz gehiago. Kultura da talde batek aldi batez ikasten duena bere arazoak konpontzeko moduaren bidez, eta Erakunde-Kulturak (EK) aurreikus daitezkeen jokabide-eredduek ematen dituzten balioei eta sinesmenei dagokie (Schein, 1990).

Scheinen eredu kontzeptualari jarraituz, talde baten kulturak funtsezko hiru plano edo maila ditu: (a) Tresna edo artefaktu behagarriak, (b) balioak eta (c) oinarrizko usteak (Schein, 1990). Eredu horretan oinarrituta, ageriko artefaktuak edo tresnak erakundeen atzean dauden balioen eta arauen irudia dira (8. irudia). Artefaktuek hainbat arazo posible erakutsi ahal dituzte: pertsonek elkarri hitz egiteko duten modua edo janzteko

estiloa, baita beste arazo iraunkorrago batzuk ere, taldearen (edo enpresa) filosofia, esaterako.

Elkarrizketa, galdetegi eta inkesten bidez, kultura baten balioak, arauak eta filosofiak azter daitezke. Hau, etnografoek pertsonei egiten dieten galderarekin konpara liteke, behatutako gertaera batzuk gertatzen diren bezala, zergatik gertatzen diren jakiteko.
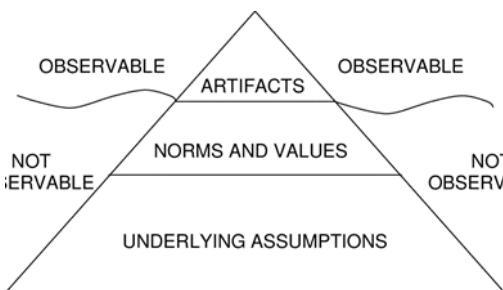
8. Irudia: Scheinen ereduko erakunde-kulturaren diagrama;
artefaktoak izozmendiaren muturra dira, ikus daitekeena (Schein 1992).

Antolakuntzako gaikuntza, sozializazioa eta diseinua eskatzen duten jarduera guztiek antolakuntzako kulturek beren funtzionamenduari nola eragiten dioten interpreta dezakete. Teoria hau hainbat eremu ezberdinetan aplikatu da, izan ere, lehen ikerketa aipatuenak antropologo, soziologo eta paisaia-kudeatzaileenak dira. Eredu kontzeptuala asko aplikatu dute erakundeekin lan egiten duten psikologoek, erakundeak ezagutu behar dituztelako eta haiekin nola lan egin behar duten jakin behar dutelako, batez ere aholkularitza-harreman batean. Eredua medikuntzaren arloan aplikatu da oro har, arlo horretan gero eta gehiago pertsonen arteko lankidetza eskatzen delako (Schein, 2009), kirurgia-taldeen kasuan bezala, kirurgiaren beraren berezko konplexutasunaren ondorioz (Edmondson 2012).

Hezkuntzaren administrazioaren arloan, zenbait konparazio daude hezkuntza bulegoen artean. Testuinguru horretan, ikertzaileek ondorioztatu dute lidergoaren eta kudeaketaren ikuspegitik dauden desberdintasunek eragina dutela hezkuntza-jardunaren kalitatean eta estandarrean (Smith & Beckmann, 2018). Goi-mailako hezkuntzaren antolamenduan Erakunde-Kultura azterketak ere egin dira, kudeaketa berritzaile eta hobe baterako aholkuak proposatzeko. Ildo horretan, botere-harremanen, komunikazio-ohituren eta diskurtso-ereduen aldaketei buruzkoak izan dira proposamenak (Molek-

Kozakowska & Geisler, 2020). Unibertsitateetan egindako ikerketa batzuek erakutsi dute lidergo-estiloak direla Erakunde-Kulturaren azpiko ezaugarriak (Akainji et al., 2019), eta erakunde kulturak lidergo eraldatzailean duen eragina esanguratsua dela (Al Issa, 2019).

Nahiz eta eredu kontzeptual eta analisi hori asko aplikatu den zenbait arlotan, hala nola psikologian edo medikuntzan, eta, neurri txikiagoan, goi-mailako hezkuntza-erakundeetan, erakunde-kulturari buruzko azterlanak falta dira Ingurumen Hezkuntzako eta Jasangarritasuneko erakunde edo administrazioei dagokienez, eta oso erreminta interesgarria izan daiteke arlo honetarako.

Erakunde-kultura ikuspegia erabil daiteke hori sustatzen duten administrazioen pentsamoldea (sinesmena) eta garatutako hezkuntza-proiektuen atzean dauden balioak eta suposizioak ikusarazteko. Kasu honetan, proiektuen ebaluazioa egiteko erabiltzen diren inkestak dira artefaktuak, eta azpian dagoen filosofia azpimarratuko lukete. Ikerketa honetako 4. helburua erakunde-kulturan oinarritzen da, ikuspegi berritzailea erabiliz eta ebaluazio-tresna bera aztertuz. Helburua da ebaluazioa nola egiten den ikusteko beste modu bat irekitzea, profesional, politikako edo administrazioko langile eta funtsezko alderdi interesdun batzuen erantzuna aztertu beharrean.

5.5.2 Programaren ebaluazioko "artefaktuak" aztertzen: inkesta kodetzea

Definitutako aldaketa-teoria orok ebaluazio-sistema bat izan behar du; izan ere, egungo hezkuntza-sisteman ebaluatzeko eta neurtzeko joera dago, bai emaitzak lortzeko, bai finantzaketa justifikatzeko. IHren esparruan, finantzaketa da ahulguneetako bat (UNESCO, 2016), eta, beraz, ebaluatzeko beharra dago. Bestalde, politikak ere emaitza horietan oinarritzen dira, norabide batean edo bestean aurrera egiteko (Pizmony-Levy, 2011).

Datuak orokorrean nola ebaluatzen diren eta nola erabiltzen diren aztertu ditugu, inkestako tresnek gure ikuspegia nola eratzen duten ulertzeko. Beraz, garrantzitsua da atzerapauso bat ematea, data aztertu beharrean, ebaluazio-tresna/artefaktua bera aztertzea. Schein-en erakunde-kulturaren ereduari dagokionez, atzean dauden arauak eta balioak zeintzuk diren eta gobernantzan aldaketaren teoria nola eratzen den erakusten

digu ebaluazio tresnak. Hau da, aurretik azaldu dugun eskola Agenda 21 programa, urtero ebaluatzeko burutzen dena, kurtso bukaeran koordinatzaileek galdetegi bat erantzuten dute. Ebaluaziorako tresna/galdetegi horren azterketa egin dugu hain zuzen ere. Ikerketa eta metodologia honen bidez, adibide bat erakusten dugu, erreplikagarria izan dadin. Izan ere, Ingurumen eta iraunkortasunerako hezkuntzan baliagarria izan daitekeen, Schein modeloan oinarritutako tresna hau ez da orain arte erabili. Gainera, gure azterlan espezifikoa osatu dugu, Euskal Autonomia Erkidegoan ebaluazio tresna/galdetegi hori inplementatzen duen administrazioan eragile nagusien ideien bidez.

Galdetegietan, galderak dira ikerketaren funtsezko eta oinarrizko alderdiak. Maria José Azofrak dioenez, "Datuen bilketaren eta, beraz, ikerketaren fidagarritasuna eta arrakasta galdera bakoitzaren aukeraketaren eta enuntziatu zuzenaren araberakoak dira" (Azofra 1999:9). Hizkuntzak, gizarte-sinbolo gisa, elkarrizketatzaileari eta elkarrizketatuari arrastoak ematen dizkie bestea bilatzen ari denari buruz. Komunikazioa hobetzeko, elkarrizketatzaileak ez du hainbeste ahalegin egin behar elkarrizketatuaren hizkuntza bera hitz egiteko, baizik eta jarrera ulerkorra lortzeko, eta elkarrizketatuak elkarrizketatzaileak ulertzen duela senti dezan (García eta Llopis, 2015).

Kodifikazioa informazio deskribatzailea aurkitzeko metodo bat da. Galdetegi baten diseinuak galdera aukerak eta galdera motak idazteko eta pentsatzeko prozesu propioa du, eta baliozkotasuna ere neurtzen du. Ikerketa honetan, aurretik azaldutako Eskola Agenda 21 urtero koodinatzaileen eskutik ebaluatzeko betetzen den galdetegiaren edukia aztertzen dugu (Eranskina II) (diseinatuta dagoela eta baliozkotasuna eta fidagarritasuna frogatuta daudela kontuan hartuta.

Ikerketa honetako 4. helburuko ikerketa-galderari erantzuteko, galdetegia kodeatuko dugu, ikerketa-galderaren helburuak eta aztertu nahi ditugun gai zehatzak gidatuta.
3. taulan, diseinatutako kodifikazio aldagaiak agertzen dira: aztertzen dugun sekzioa, kodifikazio-aldagaia eta sekzioaren deskribapena definitzen dira.

3. taula: Galdetegiaren kodifikazio aldagaiak, sorkuntza propioa

Coding section	**Variable**	***Description of the section***
Type of questions	Open-ended	Though this section we want to look at the type of question they use because they will give us information about the mindset regarding ESE.
Where is the focus?	School Municipality Coordinator Administration	In order to know where is the attention
Who is the focus? Stakeholders engagement	Students Coordinator Teacher School administration Families Others All	In this section we want to see to what extend the stakeholders engagement is measured and taken into account for assessment; who is the main target, or how important are some actors or others.
What is the educational aspect?	Curriculum Co-curriculum (informal/outdoor) Facilities/school management, others	About which educational aspect they are working on, they want to obtain information; what educational aspect do they pay attention to.
What kind of engagement looks at?	Knowledge Attitudes Environmental Behaviour Participation	
Sustainability pillar that gives reference to	Environmental Social Economical Combination (2) All (3)	Which sustainability pillar do they focus on.

Sustainability topic	Energy	Which topics do they work and measure about.
	Waste	
	Biodiversity	
	Climate Change	
	Health/wellness	
	Food	
	Others	
Others	Action	
	Analysis	
	Awareness	
	Organization	
	Communication	
	Satisfaction	
	Impact	
	Coordination	
	School-Municipality	

Ebaluazio tresna aztertzeaz gain, datuen osotasunerako, 5 elkarrizketa egin dira (2019ko abenduan), Ingurugela administrazioaren funtsezko 4 eragilerekin, programari, haren pertzepzioari eta ebaluazioari dagokienez.

5.6 Datuen analisia

Aurretik azaldutako metodologia atalak (elkarrizketak, talde eztabaidak) datuen azterketa, edukiaren analisia (*análisis de contenido*) izeneko metodologiaren bidez burutu dugu. Edukiaren azterketaren metodologiak kontzeptuzko erreferentzia-esparrutzat hartzen du elkarren artean erlazionatuta dauden kontzeptuen multzoa. Kontzeptu horiek baliagarriak dira analisia egiteko, bai eta dagoeneko egindako edukiaren edozein azterketa ebaluatzeko ere (Krippendorff, 1990). Horretarako, elkarrizketen, topaketen eta eztabaida-taldeen ahots-grabazioa egin zen, ondoren lortutako informazio guztia transkribatu ahal izateko. Elkarrizketen kasuan, gaien arabera aztertu ditugu. Eztabaida-taldeen kasuan, transkripzio horiek edukia bateratzeko

koadro batean bildu dira, eta ikasleek ikerketaren gaiaz hitz egiterakoan lehentasunezkotzat jotako itemei erreferentzia eginez hautatu ditugu. Ebaluazio galdetegiaren datuen analisia *Statistical Package for the Social Sciences* (SPSS) programaren bidez egin dugu, grafika eta bestelako datu korrelazioa egiteko. Programa honen bidez, diseinatutako kodifikazioak eta aldagaien datuak sartu ahal dira, hauen azterketarako. Besteak beste, estatistika numerikoak, grafikak, aldagaien arteko erlazioak egiten ditu.

6. EMAITZAK ETA EZTABAIDA

Atal honetan, lortutako emaitzarik esanguratsuenak eztabaidan jarriko ditugu. Beste lan eta ikerketa batzuekin alderatu ditugu. Emaitzak zehaztasunez artikulu bakoitzean irakurri ahal dira: 141 orria, 167 orria, 199 orria, 237 orria.

6.1 Kontzeptuen bilakara iraunkortasunaren hezkuntzaren bidean

Paradigma ezberdinek dagozkien testuinguru eta garaian garaiko uste eta asmoei erantzuten diete. Kontzeptuak eboluzionatu eta aldatu egiten dira, une bakoitzaren lehentasunak eta beharrak bezala. Egungo ingurumen-krisia kontuan hartuta, nazioarteko agenda 2030eko garaian, arazoa ikuspegi holistikotik ere landu behar da.

Hori dela eta, iraunkortasunerako ikasketa – *Learning for sustainability* (LfS) ardatza aukeratu eta justifikatzen dugu gure ikerketarako. Hala ere, hezkuntza praktikaren tokiko testuinguru desberdinetan, hau da, eskoletan, baliteke oraindik orain kontzeptu erabiliena eta ezagunena ez izatea. Adibidez, gure ikerketaren kasuan, Eskolako Agenda 21en bidez, kontzeptu ohikoena Ingurumen Hezkuntza da, eta irakasleak gehienetan terminologia horri egiten dio erreferentzia. Hala ere, beharrezkotzat jotzen dugu ingurumen hezkuntzatik iraunkortasunerako hezkuntzara pasatzen hastea ikuspegi eta joera aldaketak sor daitezen. Nazioarteko erakunde eta ikerketa ugaritan gertatzen ohi den bezalaxe, iraunkortasunaren kontzeptua barneratzeko (Agirreazkuenaga, 2019) modu holistiko eta ulergarrian ezagutzeko eta aplikatzeko. Dena dela ez da zertan kontzeptu bata bestearen gainetik egon, behar baina izenaren azpian ere izana gordetzen da.

Beraz, kontzeptualizazioa zehaztasunez erabili eta egokitzea garrantzitsua da, hitzek errealitate sozialak, ingurunearekiko elkarreraginak eta kontzeptu berriak sortzen laguntzen dutelako. "Zientziak zuzenean kontzeptuekin jorratzen du eta ez 'errealitateekin', diskurtso zientifikoko unitate integratzaileak kontzeptuak direlako eta ez errealitatearekin edo fenomenoarekin zuzenean. Kontzeptuak, era berean, buruko eraikuntzak dira, objektuetatik ateratako abstrakzioak eta gertaera konkretu errealak dira" (Bautista Vallejo 2001).

Hezkuntzaren esparruan, iraunkortasunaren kontzeptua erabiltzeak, inplikazio integral eta holistikoak ditu (orain arte gehienetan "ingurumen" hitzarekin lortu ez den bezala). "Iraunkortasun" kontzeptuak aldaketak sor ditzake ingurumen eta gizarte krisialdia aztertzeko, ulertzeko eta aurre egiteko, azken batean mentalitatea orokorra eta nagusia aldatuz. Gaur egun, iraunkortasun terminoa askotan erabiltzen da dimentsio sozialarekin lotu gabe, eta aldiz, ingurumenaren iraunkortasunarekin soilik lotuz. Hala ere, horrek ez du esan nahi ezagutza hori ere ezin dela integratu. Hitza bera diskurtsoan sartuta, mentalitate aldaketetara igarotzea erraztu dezake. Adibidez, gure ikerketa kasuan elkarrizketatutako irakasleei dagokienez, iraunkortasunak kontsumitzen dugunaren eta produkzioaren arteko oreka esan nahi du, eta zehazki ingurumenaren arloarekin lotzen da (Agirreazkuenaga, 2019). Hala ere badaude zenbait irakasle, bestelako gaiekin lotzen dituztenak , besteak beste, generoa edo aniztazunaren gaiekin.

Iraunkortasunerako hezkuntza modu integralean lantzeko, zenbait metodologiek lagundu egiten dute gaia jakintza-arlo desberdinetatik abiatuz aztertzen saiatzeko eta jorratzeko, eta horretarako espazio transdiziplinarrak sortzen ditugu. Adibidez, hezkuntza aire zabalean –*outdoor education*–, ikaskuntza esperimentala, proiektuen bidezko irakaskuntza eta pedagogia aktiboak bezalako metodologia pedagogikoek hezkuntza programa integratzaileagoa sortzen ari dira. Eredu pedagogikoa birpentsatu eta tresna eta metodologia aktiboak txertatzen hastea beharrezkoa dela eraldaketarako aldarrikatzen da (Steverson, 2007). Pedagogia berdeak naturara hurbiltzeko eredu interesgarria erakusten du baita (Freire, 2011). *Outdoor education* (Higgings eta Nicol, 2018) eta pedagogia bizia edo aktiboa (de Ochoa, 1993) dira erreferentzia gisa erabiltzeko tresna batzuk. Hezkuntzari buruzko gogoeta modu honek era holistikoan gauzatzen laguntzen du eta, horrela, iraunkortasuna modu integralean eta zeharkakoan sartzea ahalbidetzen du eskolako edo zentroko hezkuntza proiektuan.

Instituzio mailan, kontzeptuak berak eragin handia izan dezake edo izan beharko luke, baina aldaketak bere prosezua eta trantsizioa behar du. Adibidez, UNESCO Gizakiaren eta Biosferaren Erreserba (UNESCO MAB) programa-espazioak kudeatzeko unean, ikuspegi holistikotik abiatu behar zela erabaki zuen eta horrela behar berriak sortu ziren, adibidez hautsitako hariak arakatu eta aurkitu. Kasu honetan ikusi zen toki natural ukiezinak kontserbatzeak ez duela beti zentzurik bere horretan, hutsik baleude bezala, espazio horretan aspalditik bizi diren pertsonen eragina eta biziruapena ere aintzat hartu behar delako. Ekosistema erreserbetan gizakiarekin bat eginik bizi daiteke modu

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iraunkorrean egiten bada. Hori dela eta, kontzeptualki programa garatu zen kontserbasionismoari aurre egiteko, iraunkortasuna eta kudeaketa iraunkorrean oinarriturik. Antzeko prozesu bilakaera eta aldaketa ikus daiteke ingurumen hezkuntzatik iraunkortasunerako hezkuntzara igarotzean.

Hala ere, kontzeptu bat bestearen ordez erabiltzeak ez du esan nahi balio gehiago edo gutxiago duenik. Kontzeptu jakin bat aukeratzeko arrazoiengatik (non, adibidez, kontzeptu bat beste bat baino hobeto ulertzen den), zenbait testuinguru praktikoetan baliagarriagoa izan daitekeela terminoak beren asmoetan sinonimoak eta baliokideak bezala tratatzea.

Javier Benayasek (Benayas and Marcén 2019) oso lagungarria iruditzen zaigun metafora erabiltzen du gaiari aurre egiteko: ″Garrantzitsua ez da borrokatzen den banderaren kolorea, baizik eta elkarrekin egotea etsaia indartsu baten aurka borrokatzeko (Usategui and del Valle 2007). Izan ere, garrantzitsuena burutzen diren ekintzak dira, eta hauek daukaten eragina gugan, gure mundua ikusteko eran, beti ere erabiltzen ditugun kontzeptuak eta terminoak begibistatik galdu gabe. Termino horien bidez errealitate bat edo beste sortzen dugu; etengabe errealitateak sortzen ari gara, eta horietan oinarrituta eta horietan sartutako sinesmenetan bizi gara.

Gaur egungo ingurumen eta iraunkortasunerako hezkuntzaren marko teorikoa, etorkizuneko irakasleak hezitzen diren unibertsitate eta eremuetako heziketa-curruculumean txertatu beharko litzateke. "Hezkuntza iraunkorra" eta balioetan oinarritutako hezkuntza beharrezkoak dira hezkuntza eta bizimodu iraunkorrerako bidean aurrera egiteko paradigma holistikoak eta hezitzaileak garatuz (Hardin 1968). Gomendagarria da iraunkortasunerako hezkuntzari buruzko programak arrakastatsuak izan daitezen, "holistikoki integratu behar direla curriculum eta praktika instituzionaletan" (Schoenfeld 1975), ez baitira arrakastatsuak izango, solik pertsona indibidualen esfortzuetara murrizten badira.

Azterketa kontzeptualaren bidez, hezkuntzari eta jasangarritasunari buruzko ikerketa teoriko gehigarri bat proposatzen dugu, eta zer kontzeptu erabili beharko litzateke eztabaidatzen dugu. Horrela, ondorioztatzen dugu Balioetan oinarritutako Hezkuntzaren kontzeptuan oinarritutako ikuspegi integratzaile berri batek, beste kontzeptu batzuk integratuz, hezkuntzan iraunkotasuna hobeto kontzeptualizatzen lagunduko duela, proposatutako ereduan azaltzen den bezala (9. irudia).
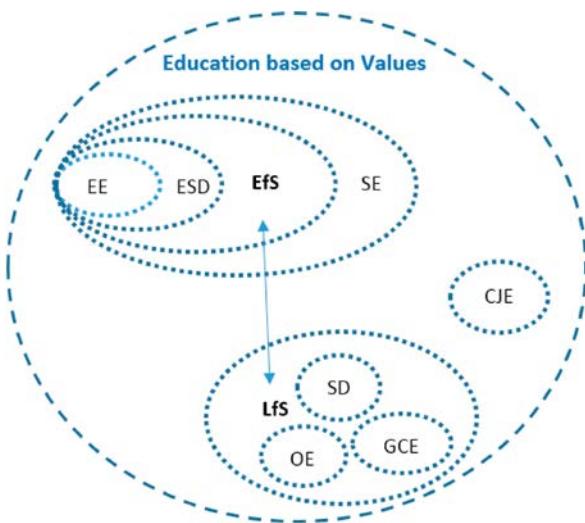
9 irudia: Diagrama kontzeptuala hezkuntza eta iraunkortasunaren inguruan. Elaborazio propioa, Sterling 2004-abipuntu gisa izanik.

Eztabaida gure gizartearentzat zer 'balio etiko' nahi ditugun ebaluatzean datza; testuinguru horretan, iraunkortasuna funtsezko kontzeptuetako bat izan behar da, eta Garapen Iraunkorrerako Helburuen aterkia erreferentziatzat hartuta, balio etiko/moral asko ditu barnean. Era berean, sortu beharreko ezagutza "kanpoan" dago, baina baita "barruan" ere, pertsona bakoitzaren aurreiritzien bidez. Gaur egungo gizartea konplexua da, eta diziplinaz gaindiko erronkek ezagutza sortzeko beste modu bat eskatzen dute, esparru aplikatuen barruan. Esate baterako, errespetua bezalako balioek (ama naturarekiko, pertsonekiko errespetua jaioterriarekiko edo erlijioarekiko axola gabe, mundu osoko pertsonekiko elkartasuna, enpatia) mundua bat dela ulertzen lagun diezagukete, herritartasun globala balio horretan oinarrituta garatu ahal izateko. Sterlingek (Sterling 2011) proposatzen du, pentsamendu kritikoko trebetasunak aplikatzean (arauen eta balioen analisiak eta sistemen pentsamendua barne), munduaren

ikuspegia, balioak eta ikaslearen ezagutza-modu pertsonalak desafiatu egiten direla eta, ondorioz, aldatu egiten direla. Autore honek ikaskuntza sakonago eta eraldatzaileago hori sustatzen du, non kontzientzia-aldaketa bat gerta daitekeen eta kontzientzia handiagoa ahalbidetu, mundua zer eta nola aldatu behar den ez ezik, zergatik ere bai (Giangrande et al. 2019).

Emaitzetan oinarrituta, honako proposamen hau sortu dugu (9. irudia), kontuan hartuta praktikan aplika daitezkeen literaturako kontzeptu garrantzitsu batzuk grafikoki adierazteko beharra. Kontzeptuak honako hauek dira:

- EE: *Environmental Education* – Ingurumen Hezkuntza
- ESD: *Education for Sustainable Development* – Garapen Iraunkorrerako Hezkuntza
- EfS: *Education for Sustainability* – Iraunkortasunerako Hezkuntza
- SE: *Sustainable Education* – Hezkuntza Iraunkorra
- LfS: *Learning for Sustainability* – Iraunkortasunerako Ikaskuntza
- SD: *Sustainable Development* – Garapen Iraunkorra
- OE: *Outdoor Education* – Aire Zabaleko Hezkuntza
- GCE: *Global Citizenship Education* –Hiritartasun Globalerako Hezkuntza
- CJE: *Climate Justice Education* – Justizia Klimatikoari buruzko hezkuntza

6.2 Garapen Iraunkorrerako Helburuak eta Iraunkortasunerako Hezkuntzarako testuinguru nagusia

Aurrean aipatu dugunaren ildotik, emaitzek erakusten dute arrakastaren gakoetako bat gaiari ikuspegi holistiko edo diziplinarteko batera heltzean datzala. Hau da, "ingurumen hezkuntza" ikasgai bat gehiago izango balitz bezala ez ulertzea, aldiz, curriculumaren eta ikastetxearen irakasgaiaren ikasketa planean txertatutako zerbait bezala baizik, zeharreko gaia. Zenbait ikastetxek dagoeneko hori egiten duten arren, erronka izaten jarraitzen du, nahiz eta orain arreta hartu duen. Gure ikerketa honek ezagutu eta aztertu nahi izan du iraunkortasunaren kontzeptua modu naturalean txertatuta dagoen hezkuntzan, hezkuntza sistema bere horretan osotasun gisa ulertuz. "Ikastetxeek ikasleei

irakatsi behar diegu bizi garen munduan, gure espazioa mundu hortan eta babesten gaituzten ekosistemak babestera" (Nazir and Pedretti 2016).

Iraunkortasunerako hezkuntzak diziplina arteko ikuspegia behar du, transdiziplinarra bihurtuz, pentsamendu kritikoa bultzatzen du eta arazo konplexuak konpontzen ditu. Beraz diziplina bat baino gehiagotik landu behar da iraunkortasunerako hezkuntza (Saylan and Blumstein 2011). Ingurumen-sentsibilitatea orokorrean sustatzen eta indartzen da birziklapenari, kontsumo iraunkorrei eta parke naturalak bisitatzearekin adibidez Aldiz, iraunkortasun kulturala ez da oso ezaguna (Zoller 2012).

Zentzu horretan, Nazioarteko Agenda 2030 eko Garapen Iraunkorrerako Helburuek (GIH) aukera bat eskaintzen dute iraunkortasuna modu integralean lantzen hasteko tresna eskuragarri gisa hartzen bada. GIHek hezkuntza irakasgai eta proiektu guztiak integratzeko esparrua eskaintzen du. Nazioarteko helburuak dira 2030eko agenda baina aldi berean tokian tokiko hezkuntza eta guneetan proiektu integratuak eragiteko balio digu. Testuinguru horretan, funtsezkoa da iraunkortasunerako hezkuntzaren eraginkortasuna bermatzeko, irakasleek kualifikazio espezifikoa jaso beharko luketela, Nazio Batuen GIHekin lerrokatutako hezkuntza eskaintzetan (Bertschy, Künzli, and Lehmann 2013). Izan ere, gure azterketan agiri denez, oraindik orain ere ez da ohikoena GIHak ezagunak izatea bigarren hezkuntza irakaslegoaren artean.

6.3 Irakasleen jarrera eta ikuspegia iraunkortasunerako hezkuntzari buruz.

Ingurugiro eta iraunkortasunerako hezkuntza bizimodu iraunkorrerako eraldaketa sozialean ekarpenak egiteko potentzial handia duen tresna da. Hezkuntza sistemak eta hezkuntza zentroek garapen iraunkorra ezartzeko rol garrantzitsua daukate (Bertschy et al. 2013). Hezkuntzak funtsezko eginkizuna du etorkizun iraunkorrago baten bidean jorratu beharreko jardueretan, nahiz eta jarduera horiek kasu praktiko bakoitzera adaptatu behar diren (Pauw et al. 2015). Hezkuntza formalaren eremuan, ikerketa honetan aztertutako kasu guztietan irakasleak dira ingurumen-hezkuntzako programak arrakastaz abian jartzeko giltza.

Ildo horretan, banakako kontzientzia maila eta sentsibilizazioak, eskolan gaiaren inguruan egiten den lana eta motibazioak baldintzatzen dutela, ondorioztatu dugu. Emaitzek azpimarratu dute irakasleen gehiengoak ingurumenarekiko kezka duela; hala ere, ingurugiroaren aldeko jarrera aktiboa ikasgelan edo arlo pertsonalean hartutako konpromisoa mugatua eta murritza da. Ingurumen psikologiaren ikuspegitik egindako ikerketek, Thomson eta Barton-ek (1994) egindakoek, erakusten dute ingurumenaren alde egiten duten balioak eduki arren, zaila dela portaera pertsonala aldatzea eta norberarengan aldaketak egitea, batez ere zeozer sakrifikatu behar bada edo eragozpenak badakartza (Thompson and Barton 1994). Ingurumenaren aldeko pentsaera eta ekintzen arteko deskonektatze hori eragin dezaketen arrazoi batzuk daude. Erlazio hori balio, jarrera eta jokabideen artean aztertzen duten hainbat eredu daude, esate baterako, Schwartz-ek balio ekologikoen eskala (Schwartz and Bilsky 1987), Dunlap eta Van Liere-ren tresna metodologikoa: Paradigma Ekologiko Berria (NEP) (Dunlap 2008) edo Hines, Hungerford eta Tomeraren eredua (Hines, Hungerford, and Tomera 1987). Eredu horiek guztiak bat datoz esanez, hasiera batean informazioa edukitzea eta arazoa hobeto ezagutzea beharrezkoa dela, eta dagokion portaera aldaketa geroago etorriko dela. Kontuan izan behar da irakasleek gizartearen parte direla eta, beraz, ingurumen arazoarekiko duten kezka ez dela zertan lotu ikasgelako lanarekin, gure ikerketak argi erakutsi duen moduan.

6.4 (Bir)konektatzea naturarekin

Iraunkortasunerako hezkuntza-proiektuen jarduera espezifikoaren azterketatik abiatuta, ondoriozta dezakegu pertsonak inplikatzea eta haien kontzientzia handitzea lortuko duen ezarpen arrakastatsu baterako gakoetako bat, parte hartzen duten jarduerak egitean datzala. Horrek esan nahi du inguruko errealitatearekin kontaktua zuzena eskatzen duen jarduera bat garatzea, finean, naturarekin harremana duena, premiazkoa da. Lotura dago pertsonak naturarekin birkonektatzearen eta horiek gerora ingurumenarekiko sentsibilitate handiagoa lortzearen artean. Singapurreko lehen eta bigarren hezkuntzan egin berri diren ikerketek frogatu dutenez, ″Naturarekiko lotura ingurumenaren aldeko portaeraren iragarle erabakigarritzat hartzen da″ (Caballero Guisado and Baigorri Agoiz 2018).

Era berean, ikerketa esperientzia berriak izan dira Eskozian eta Kanadan, besteak beste, aire zabaleko hezkuntzak ingurumenaren aldeko sentsibilitatea garatzeko duen ahalmena erakusten dutenak (Braun and Dierkes 2017; Crone and Dahl 2012). Ezin dugu ahaztu, iraunkortasun sozialeko arazoak sustatzeko, bidezko merkataritzarekin lotutako esperientziak ere badaudela, adibidez, edo asiloetara edo etxerik gabeko pertsonen etxeetara bisitak egiteko aukera. Ikasleek jarduera horiek eskolatik kanpo egiteko pizgarria ere bada. Ikasgelatik kanpoko esperientzien potentziala onartzen bada ere, irakasleek zenbait arazo planteatzen dituzte, hala nola denbora eta horiek gauzatzeko aurrekontu-mugak.

Garrantzitsua da, halaber, horrelako jarduerak egiteko ikasleen adina azpimarratzea. Izan ere, irakasleekin egindako ikerketaren emaitzetako batek erakusten du nerabeekin lan egiteak, erronka eta aukera interesgarriak eskaintzen dituela aldi berean, eta emaitza hori beste ikerketa batzuek ere erakusten dute (Caballero Guisado and Baigorri Agoiz 2018). Kaplanek eta Kaplanek argudiatu dute nerabezaroan espazio naturalek, 'garatutako' espazioek baino lehentasun gutxiago dutela. Aldi honi "itxaroteko denbora" deitzen diote, naturarekin zerikusia duten gauzetan interesa galtzen denean [56]. Bestalde, Cronek eta Dahlek (2012) ikerketa sozial eta afektiboaren garrantzia azpimarratzen dute, motibazio-ikaskuntzarako aukerak hobeto murgiltzeko eta ulertzeko (Kapalan & Kapalan, 2002).

6.5 Ikasleen pertzepzioa iraunkortasunerako hezkuntzari eta honekin lotutako arazoei buruz

Gure ikerketaren emaitzek erakusten dute deskonexioa dagoela ingurumen-hezkuntzako programa eta asmo teorikoen eta eguneroko ekintzen artean bereziki ikasleen ekintzen, motibazioen, pertzepzioen eta kontzientziaren artean. Deskonexio hori beste azterlan batzuetan ere ikusi da (Cebrián eta Junyent, 2015). Beharrezkoa da egoera praktiko zehatzagoak sortzea, hala nola, etorkizun iraunkorra aurreikustea eta ikasle bakoitzak horiek lortzeko egin behar den bidea aurreikustea. Autore batzuek nabarmendu dute, halaber, ahalegin osoa egin behar dela irakaskuntzako erakundeetan, ikastaroen bidez, ikasleak Iraunkortasunaren ikuspegi globaletik hausnartzera bultzatzeko (Zeegers eta Clark, 2014).

Iraunkortasunaren arloko gaitasunek eremu sozial eta politikoan arazoei heltzeko aukera izan behar dute, baina gaitasun horiek maila pertsonalean ere funtzionatu behar dute, banakako erabakiak eta bizimoduak gidatuz (Stoof et al., 2002). Ikuspegi bikoitz horrek, hau da, sistemakoak eta pertsonalak, trebetasunak garatzeko jokabide desberdinak eskatzen ditu, metodologia kognitiboak eta ez-kognitiboak/afektiboak inplikatzen dituzte, eta ikasleak etorkizun iraunkor edo jasangarriarekin konprometitutako herritar bihurtzera bultza ditzakete (Delouhá et al., 2019).

Ohitura zaharrek oso oztopo handia osatzen dute, eta erosotasun-nahiak garrantzi handia du ingurumenaren aldeko portaeren konfigurazioan. Ikerketa honetan, familiaren ohiturek pertsonen jarreretan eragina dutelako ideia nabaria da eta indarturik agiri da; kultura hegemonikoak bizimodu jasanezina zabaltzen badu, orduan zailagoa da ingurumenaren aldeko portaera izatea eta jarreraren eta ekintzaren arteko aldea handitu egingo da (Kollmuss eta Agyeman, 2010). Diskurtsoan ikuspegi positiboa erabiltzea komenigarria da gizarte- eta ingurumen-krisiari aurre egiteko; izan ere, itxaropena izatea sentimendu atsegina izateaz gain, indar motibatzaile gisa ere funtziona dezake, norberak ukapena kontrolatzen badu (Ojala, 2012).

Eskola Agenda 21 programaren helburua herritar kritikoak sortzea da, beraien ideiak islatu eta eraikitzeko gai izan daitezen. Hala ere, praktikan, ez dago oso argi nola gauzatu behar diren konstruktibismotik datozen proposamen batzuk, balioen eraketa sustatzeko, ikasleen arteko gizarte-arazo eta -portaera espezifikoei buruzko eztabaiden bidez. Maila arrazionalean eta eskola-ingurunean, ikasleek balio etikoak eta moralak erakuts ditzakete giza eskubideen eta ingurumenaren aurrean, baina patiora irtetean edo eskolatik irtetean portaera desberdinak izan ditzakete (Díaz Barriga, 2006). Ikerketako lagineko ikasleen ustez, ingurumen-hezkuntzaren gaiak presentzia handiagoa izan beharko lukete eskola-ordutegian, jarreretan eta eguneroko ohituretan benetako inpaktua sortzeko eta jardundako ekintzak egonkorragoak izan daitezen.

Lehen aipatu bezala, eredu pedagogikoa birpentsatu eta eraldaketarako tresna eta metodologia aktiboak txertatzen hasi behar da (Steverson, 2007). Emaitzetan erakusten den funtsezko elementu bat zera da: ikasleak Eskolako Agenda 21ko jarduerak definitzeko prozesuan, sartzeko beharra da; ikerketako laginaren ikasleak ez dira

programaren parte sentitzen, uste arren horrela izan beharko litzatekeela. Unibertsitate mailako beste ikasketa batzuetan frogatu da ikasleek Iraunkortasunerako hezkuntzako programen garapenean parte hartzea funtsezkoa dela ikasleek eskolak haiengan duen konfiantza bultzatzeko (Perrello-Marín et. Al., 2018). Ikasleen ahotsak kontuan hartzeak eta erabakiak hartzeko prozesuan eta ikastetxeko jardueretan parte hartzean gaitzeak, harmonia-egoera sortzen du, eta iraunkortasunerako hezkuntza eraginkorragoa egin. Halaber, erantzukizun handiagoa dute ikaskuntza-prozesuan (Perello-Marín et. Al., 2018). Laburbilduz, Ingurumen hezkuntzako proiektuetan parte hartzen duten pertsonen protagonismoa sustatzeko eta ikasleen parte-hartzearekin ezagutza elkarlanean sortzeko eta giro berria eragiteko (Chawla, 2008), beharrezkoa da programa arrakastatsuagoak garatzea. Ikasleak dira ikaskuntza prozesuaren erdigunea eta aldi berean sortzaile eta partaide zuzena direla sentitu behar dute.

6.6 Ikasleen ikuspegia arauzko eskolako ingurumen-programari heltzeko moduari buruz

Ikasleen *focus group*-en emaitza interesgarrietako bat da ulertzen dutela garrantzitsua dela iraunkortasunerako ekintzetan inplikatzea, ez bakarrik beraiek ikasleak, baita ikastetxeko zuzendaritza eta mantenimendukoak, familiak eta lagunak ere. Funtsezkoa da erabakiak eta jarduera kolektiboak ziurtatzea ikasleen, irakasleen, familien eta komunitate osoaren artean.

Ikasleek, halaber, psikologikoki mezu bikoitzak deritzona hautematen dute helduen munduan, hau da, nola jokatu behar den adierazten duen mezu bat jasotzen dute eta errealitatean egiten dena beste mezu bat (gurasoak, irakasleak eta hainbat eragile sozial, hala nola esatariak, aktoreak eta politikariak); sarritan, ekintzabideak esandakoaren aurka funtzionatzen duela ikusi da (Díaz Barriga, 2006).

Ingurumen eta iraunkortasunerako hezkuntzak korrontearen aurka lan egiteko erronka du, politikagintzako agintariak edo multinazional nagusien mezuak iraunkortasunaren kontrako norabidean mugitzen baitira. Beraz, beharrezkoa da ikasleen ikuspegia kontuan hartzea, erreferenteen (kasu honetan, ikastetxearen) jarrera modu koherentean erabiliz eta erreferenteen iraunkortasunaren aldeko ekintzak sustatzea frustraziorik sortu gabe. Horregatik, iraunkortasunaren hezkuntzarekin lerrokatutako hezkuntza-programak

modu integralean diseinatu eta ezarri behar dira (Jackson eta Pang, 2017). Iraunkortasuneranzko integritateari buruzko ikasketa-plan baten testuinguruan, sistemen pentsamenduak eta praktikak gizarte unibertsal gisa norantz goazen hausnartzen lagunduko dute (Lazlo, 2012).

Ikastetxeek, ahal den neurrian, ekintzak lideratzeko eta eguneroko arazo zehatzak iraunkortasunaren ekintzabidean jartzeko erantzukizuna dute. Ikastetxearen kudeaketak berak zeregin garrantzitsua izan dezake. Sormen-proiektuak abiarazi diren adibideak erreferentzia gisa erabil daitezke, unibertsitate-campus baten bizitza eraldatu dutelako eta langileen eta ikasleen jarreretan eta portaeran eragina izan dutelako (Adombent et al., 2014).

Ikuspegi hori bat dator eskola-osoko komunitateekin –*whole-school project*–, Melbourneko eskoletan garatutako esperientzia, iraunkortasunaren esanahia egunero txertatzeko ikuspegi bat aurkeztuz, eskola osoaren ikuspegi sistemikoan oinarritzen dena (Bosevska eta Kriewaldt, 2020). Agenda 21arekin batera, iraunkortasunerako Eskola Jasangarrien ziurtagiria izatea, lerro horretan joango litzateke baita.

6.7. Iraunkortasunerako hezkuntzaren EAEko administrazio publikoaren diseinu eta ebaluazio-prozesua eta ikerketen ekarpena.

Programek nola funtzionatzen duten ulertzea bezain garrantzitsua da jakitea zer funtzionatzen duen jarduera arrakastatsu baterako eta zerk ez duen funtzionatzen. Ondorioz, programaren ebaluatzaileek, honen emaitzak ez ezik, programaren eragina eta prozesuak ere ikertu beharko dituzte (Rickinson et al., 2016). Horrela, ebaluazioak norentzat eta zein baldintzatan, ondo funtzionatzen duenari buruzko informazioa, jaso behar du. Prozesuan parte hartzen duten guztiek, hala nola finantzatzaileek, koordinatzaileek, irakasleek, ikertzaileekin batera, elkarrekin lan egin behar dute iraunkortasunerako hezkuntzako programen eraginari eta inpaktuari buruzko argibide bat garatzeko. Gure azterlanean, ebaluazio galdetegiak erakutsi du partaidetzarekiko kezka handia dagoela, item asko daudela horri dagokionez, emaitza arrakastatsuak lortzeko gakoetako bat dela partaidetza.

Aztertutako ebaluazio-tresnak islatzen du, halaber, administrazioak uste duela eskola bakoitzean programaren koordinazioaz arduratzen den pertsonaren konpromiso-maila bereziki garrantzitsua dela, eta horrek erantzukizun handiegia sor dezake pertsona horrengan. Hori koordinatzaileek eman dizkiguten erantzunekin ikusi izan dezakegu (sakoneko elkarrizketak), ardura zabalegia beraien lepo sentitzen dutela adieraz6 dutenean.

Hala ere, beste kasu batzuetan bezala, ikertutako galdeketan, galdera gehien programari berari eta eskolari buruzkoak dira, behin ikasleak eskolatik ateratzen direnean gertatzen denari buruzko aipamen askorik egin gabe. Bestalde, galdetegian ez dago iraunkortasunaren zutabe ekonomiko edo sozialari buruzko erreferentziarik. Hori agendak ikastetxe bakoitzerako gai batean duen berariazko enfasiaren ondorio izan daiteke, bere testuingurua dela eta. Iraunkortasunerako hezkuntzaren inguruan egiten diren ebaluazio-ikerketa askok programa zehatzen ezaugarri eta helburuetara bideratzen dute (Stern et al., 2014), eta horrek mugatu egiten du ikertzaileek testuinguruaren eragina ulertzeko duten gaitasuna (Carleton-Hug & Hug, 2010). Hala ere, emaitza multzo zabalagoa neurtzeak emaitza zabalagoak lortzeko eta emaitza gehiago ateratzeko gaitasuna hobetuko luke (Hollweg et al., 2011). Programen garatzaileek prest egon behar lukete, programa baten barne hartzen dituen jarduerak ez ezik, aldaketaren teoria –*Theory of change*– iraunkortasuna helburutzat harturik, aurrerantz eginez zelan bilakatzen den aztertzea.

Iraunkortasunerako portaera eta jarrerak oso garrantzitsuak dira arlo horretan, baina elementu horiek ez dute presentzia handirik hemen aztertutako ebaluazio-tresnan. Ezagutza handitzeak ez du zertan portaera aldatu behar, eta ezagutza berriak ematen dituzten hezkuntza-programa horiek jokabidearen emaitzetan eragina izatea ez da espero behar (Ham, 2013). Hala ere, ezagutza da ebaluazio-programetan gehien neurtzen den emaitza (Stern et al., 2014), eta horren arrazoia izan liteke eskola-curriculumak gehiago zentratzen direla ezagutzaren horniduran. Programak berez ez dira portaera-emaitzak lortzen ari.

Aipatu ditugun azterlanek proposatu dute osagai kognitiboetan eta jokabide-osagaietan zentratutako ebaluazio-metodoak erabiltzea, landutako gaietan arrakasta hobeto adierazteko (Thomas et al., 2019). Ebaluazio-sistemari dagokionez, arrazoi bat izan

liteke ikertzaileak ez direla portaeraren emaitzak neurtzen ari, edo, besterik gabe, ezagutza errazago dela neurtzeko.

Ikertzaileek zeregin garrantzitsuagoa bete dezakete, neurketa egokiak bermatzeko ez ezik, programaren diseinua eta birformulazioa hobetzeko ere (Monroe, 2010). Ebaluazio-ikerketak potentzial handia du hezkuntza-programak babesteko eta hobetzeko. Adibidez, aztertutako kasu honetan, gure ikerketan, kanpoko ingurune sozioekonomikoarekin, jarrerarekin eta portaerarekin lotutako elementuak indartzeak iraunkortasunerako bidean beharrezkoak diren hezkuntza-ekintzak indartuko lituzke. Gainera, programa hobetu egingo litzateke koordinatzailea ez balitz zuzenean arduratuko ebaluazio-galdeketari erantzuteaz, baizik eta kanpoko ebaluatzaileek lagunduta. Edonola ere, hainbat metodo eta ikuspegi behar dira programaren arrakasta ebaluatzeko, testuinguru batean baliagarriak diren ebazpenak beste batean erabilgarriak izan ez daitezkeelako.

Gure lanaren ikuspegia non kokatzen den nabarmentzen duten zereginei dagokienez, galdera gehienak ikastetxearen gestioari buruzkoak izan dira, iraunkortasunari dagokionez ikastetxeko azpiegiturari buruzkoak. Eskolen antolaketa-testuingurua muga izan daiteke ebaluazio-programa baterako, baina ebaluazio horiek tresna bat izan daitezke arauak eta baloreak aldatzeko, eta aurrera eraman nahi den aldaketaren teoria identifikatu eta garatzeko. Ebaluazioak koherentziaz eta zorroztasun zientifikoarekin egin behar dira, batez ere hezkuntzan, emaitzak konplexuak eta zailak direnean (Thomson et al., 2003). Ingurumen hezkuntzaren arloan komunitatearen ebaluazio gaietan trebakuntza beharrezkoa da, irakasleak eta hezkuntzako beste profesionalak ez baitira zertan espezialistak izan behar ebaluazio programak burutzen.

Esan bezala, ikerketaren bidez eta administrazioak abian jarritako politika eta programetan horren inguruko zenbait pista eta irizpide ditugu; normalean, programen diseinuak ebaluazio jakin baterako pentsatuak eta oinarrituak dira. Nola egin ebaluazioa, zein tresna erabili eta zer neurtu hezkuntza arloko gai eta eztabaida handienetako bat da; are gehiago ingurumen eta iraunkortasunerako hezkuntzan neurtu nahi duguna maiz ez baita ezagutzak (ohi bezala), jarrerak edo jokabideak baizik.

Steverson (2007) are urrunago doa eta ingurumen hezkuntza sustatzen duen ikuspegi pedagogikoa kontraesanean duen egungo hezkuntza sistemaz hitz egiten du. Argudio hauen alde puntu argiak deskribatzen ditu. Lehenik eta behin, eskola konbentzionalak ingurumen-erabakiak menderatzen dituzten arau eta balioak erreproduzitzen dituela dio, eta, aldiz ingurumen-hezkuntzak gure erabakiak hartzen dituzten balioak eraldatzea du helburu. Bigarrenik, oraingo eskolaratzea segmentatua eta indibiduala dela, ingurumen hezkuntza holistikoa eta kooperatiboa izan beharko litzatekeela aldarrikatzen du; ezagutzaren eta pentsamenduaren ikusleak eta hartzaileak posizio pasiboa hartzen duela, ingurumen hezkuntzak pentsalari aktiboak eta jakintza sorgailuak bilatzen dituen bitartean; eskolatzeak gai "artifizialak" ditu eta ingurumen hezkuntza egoera errealak jorratzen ditu. Hirugarrena, ebaluazio sistemari buruz hitz egiten du. Zentzu horretan, "ohiko" eskoletan adierazi du, kontrolatuta daudela eta galderak eta erantzunak azaldu ahal izateko moduaz baliatzen direla. Aitzitik, ingurumen hezkuntzak pentsamendu kritikoa bilatzen du eta ikasleak arazo arazotsuetan inplikatu nahi ditu, eta hau da "ordena eta kontrolari eusteko arrisku handiagoa" (Steverson, 2007).

Horrenbestez, testuinguru pedagogikoak zaila egiten du ebaluazio egokia egitea, Steversonek dioenez. Jartzen duen laugarren puntua irakasleen curriculumari eta ideologia pedagogikoei buruzkoa da; irakaslea autoritatea eta ezagutza sortzailea da. Esaten duen moduan: "Introducing environmental education into a school challenges the dominant conception, organization and transmission of knowledge, creating for most teachers a conflict with their approach to teaching and learning (Esland, 1971). Treating knowledge and its transmission as problematic creates a new definition of the role of the teacher and demands changes in the organizational conditions under which teachers generally work. If environmental education in its contemporary form is ever to become a reality in schools, then these two issues must seriously be addressed" (Steverson, 2007).

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I. SECTION: INTRODUCION

7. SUMMARY OF 1ST SECTION

7.1 Introduction

This thesis is composed of four articles. The articles analyze the value that education for sustainability can have in the achievement and implementation of the Sustainability and Sustainable Development Goals in education initiatives for sustainability in the Basque Autonomous Community (BAC). In order to achieve that purpose, the analyses have been conducted on five educational centers of the BAC taking into account environmental and sustainability education from the perspective of key agents in the educational field: teachers, students and administration. The School Agenda 21 has been the departure point, and the study is based on the job of a working group called Ingurugela that operates from the administration of the Basque Government. Moreover, the research is focused on the actions that are carried out in compulsory secondary education centers of the BAC.

In addition to the vision of the previously mentioned agents, the study also collects the work done from the Basque administration. The main contributions are divided into four articles. In the first article, an analysis of sustainability and education for sustainability is carried out on a conceptual level, and it shares a final concrete proposal. The second and third articles analyze the point of view of teachers and students regarding environmental and sustainability education in the context of their educational center (from the experience of the School Agenda 21). The fourth article assembles the results of the research on the instruments used by the administration, the Ingurugela centers, to evaluate sustainable education and therefore the School Agenda 21 program. The article analyzes the idea built around education for sustainability through those evaluation tools (evaluation survey).

The context of the thesis is the global, social and environmental crisis we are undergoing, which threatens the survival of planet Earth and its inhabitants. The economic and productive systems have a direct influence on the environmental crisis, and this is a symptom of a more generalized damage since the crisis has been fueled by a policy of destruction of the vital environment of humanity. Today we know that climate change accelerates many humanitarian crises: the tendency for natural disasters

to occur has increased, droughts cause famines and endless conflicts are generated over natural resources.

In the last few months the recent coronavirus crisis has shown us that imbalance in nature increases the risk of pandemic. Nature is and has been our teacher from the beginning. Even now, it teaches us what direction we must follow to progress. Science clearly shows us the right course towards a healthy society. However, although the data is clear, we are still building the road and trying to walk it.

In order to put ourselves on the path towards a world based on human and environmental sustainability we have different options. One of them is acting in education. Our character, who we are, is conditioned by the context in which we live, as well as by the kind of education that is implemented in that context. We are learning at all times, either through the stimuli we receive at school, at home or in the street, through a range of habits and attitudes. To orient ourselves towards sustainable education, we could explore different areas; this thesis, though, will delve into the field of regulated education. Why should we put our focus on formal education? It has been for more than 40 years that education and sustainability have been in force among us, especially in the fields of non-formal education. The activities carried out and developed to date outside of formal education have been of vital importance for the development of this environmental and social awareness. Nevertheless, in regulated or formal education there is also an important concern for the environment and sustainability. That is why formal education is the field we have identified as necessary in order to contribute to build a society with a critical mindset, and, as inhabitants of a shared planet, to offer people tools so that each one can measure and judge their personal impact through their attitude and behavior. Education for sustainability is an important part of that process.

In the journey towards education for sustainability, the Sustainable Development Goals are a reference and a guide at an international level in terms of conceptualizations and theorizations. Therefore, if this research aims to contribute to education for sustainability, we should start with a conceptual-practical reflection.

The geographical scope of this study is limited to the Basque Autonomous Community, as the practical cases are located in that specific geographical area, but it is part of an international research with concrete global scientific challenges. In this research, we have selected and worked on specific cases in which we made new contributions and carefuly selected research cases for the value of their contribution in the field of research at hand (Pizmony-Levy, 2011).

The Basque Government created CEIDA in 1989 to reinforce the creation and operation of "Centers of Education and Didactic Research with the Environment". Later it was renamed as Ingurugela by the Order of March 16, 2005, of the Councilors of Education, Universities and Research and of Land Management and Environment of the Basque Government. In this context, a variety of research projects came to light as well as the School Agenda 21 program.

First of all, a practical work was carried out for three months in one of the public administration offices that works on education for the environment and sustainability in the Basque Autonomous Community, that is, the Ingurugela office in Bilbao. Therefore, the path of this research has been defined together with the experience of the people identified as 'key informants'.

As we delved into the subject at a theoretical level some concerns appeared while looking into the experience of specific cases. By reading documents about what is done both globally and in specific cases, one can get a general idea of the matter. But then again, what is the opinion of the people who work on the issue on a day-to-day basis? In the last 15 years, several experiences and trends have been collected, and still that is the first question that arises for the researcher. This question also refers to the governance of Ingurugela, so it is of interest to the advisers and employees of Ingurugela as well. In fact, the need to evaluate the work done by Ingurugela is one of their biggest gaps. So, by identifying this 'gap' or 'need', the direction of the research is outlined.

Along with this, other concerns appear. Who are the agents that can promote change towards a sustainable world, especially in the field of formal education? Today's students and youths are the agents of change for the future; knowing the perspectives and opinions of students is essential for a successful sustainability education program.

Therefore, this research departs from the opinions, approaches and practices of the actors and agents within the educational system; they are selected as objects of study, and we draw conclusions from their perspectives. People who are agents are present in different fields. On the one hand, there are professionals who are dedicated to environmental education on a day-to-day basis at the level of public administration. In addition to that, also on a day-to-day basis, there are teachers who approach these programs in educational centers; and finally, there are students. An analysis based on the opinion of teachers and students has been carried out because that dimension is decisive, taking into account the key role they play as direct agents for social transformation towards a world based on sustainability. New students are the foundation of the society of the future and the world of the future. Furthermore, local experiences are important because the world is articulated by local experiences that have a worldwide impact.

Therefore, the main question would be: to what extent is the scientific perspective of sustainability ingrained among agents into Basque formal education? Is the educational system based on the vision of sustainability science?

As aforementioned, evaluation, being able to assess data and it, is what helps us in developing and improving a certain program. At an academic level, there is a need to foster environmental evaluation programmes and research in education for sustainability, as well as public administration proposals in order to improve assessments. A continuous deficiency in evaluation has already been identified in Ingurugela; thus, the research at hand aspires to help fill that void.

Therefore, in addition to the vision of the agents, this thesis will also offer an analysis into the assessment tools that are used by the Basque administration, and since it has not been done before, it becomes innovative and very specific to this study. In fact, many studies analyze the data obtained from those evaluations, but the question is, what are the criteria used to collect it? The examination of the questionnaires is a first step, since the questions themselves contain half of the answer, which allows us to deepen in the weighing of the answers.

In the long trajectory of this research, although the local case is the main object of study, we have tried not to lose the international focus, as the world is one and those of us who work in this field walk the same path.

In this context, the research stays conducted at the Moray House School of Education, University of Edinburgh (Edinburgh) hosted by Outdoor and Environmental Education research group and at Teachers College, Columbia University (New York) have significantly enriched this PhD dissertation, both at a theoretical-academic level and through practical experiences. The cases and experiences explored in other countries have become referential for our research and have been beneficial to introduce an international perspective in the interpretation of the results.

What is more, even with a view to future research, this study has opened several channels that have to do with the Basque public administration in charge of education for the environment and sustainability and for collaborations that may come from now on.

7.2 Objectives and research questions

As explained in the introduction, to tackle the social and environmental crisis we are undergoing, among the measures to guarantee the sustainability of the planet there is a need to focus on Education for Sustainability. The main objective of this thesis is set in that context. The 17 objectives of the 2030 international agenda of the United Nations, the 17 Sustainable Development Goals (SDGs), have been taken as a framework of reference. Among those 17, the fourth objective was named 'Educational Quality' and it is roughly connected with the development and improvement of educational models that aim to guide peoples all over the world towards Sustainability. Therefore, the general objective of this research is:

To contribute to international debates on the value that education for sustainability and the Sustainable Development Goals may have, through research based on specific cases of education for sustainability projects carried out in the Basque Autonomous Community.

The specific objectives are:

1. To analyze the conceptual discussions around environmental and sustainability education and propose an approach within an educational framework by which the concepts and visions under the umbrella of SDGs could be integrated, guided by a previous review of emerging concepts such as learning for sustainability and sustainable education.

   This specific objective is connected with the following publication: 'Education for Agenda 2030: What direction do we want to take going forward?'.*Sustainability*, 2020, vol. 12, n. 2035.

2. To examine the key factors in the used methodologies and the attitudes taken by secondary school teachers towards education for sustainability. Based on specific cases of secondary schools in the Basque Autonomous Community, the implementation of education for sustainability projects is analyzed from the perspective of the teachers. The case studies are located

in different socio-economic and environmental contexts. The analysis also attempts to evaluate and offer a diagnosis of the degree of knowledge on the Global 2030 Agenda and its future implementation. Therefore, this specific aim is related to identifying those key factors that aim to successfully implement and impart knowledge about education for sustainability and SDGs.

This specific objective corresponds to the publication named: 'Embedding Sustainable Development Goals in Education. Learning for sustainability from the teachers' perspective in the Basque Autonomous Community'. *Sustainability,* 2019, vol. 11, n. 1496; doi:10.3390/su11051496

3. To study and understand the perception of Education for Sustainability from the perspective of secondary school students in the Basque Autonomous Community. Student's perspective is often forgotten, that is why we would like to underline that in this research students have been selected as key actors for a sustainable future. The ultimate objective has been to formulate criteria for a successful educational design and implementation that can generate changes and transformations in attitudes towards sustainability. This specific objective is reflected in the following publication: Secondary students' perception, positioning and insight on Education for Sustainability. *International Research in Geographycal and Environmental Education (Accepted - Pending for publication)*

4. To examine policy artifacts in order to understand the Organizational Culture (OC) of sustainability education policies and what these artifacts can tell us about policy commitment with the program. The main objective is to analyze the perspective, norms and values that the stakeholders involved in ESE policies show through those evaluation artifacts, deepening in each case study of the Basque Autonomous Community. Regarding Schein's OC model, the artifact is the survey that gives us a clue about the norms and values that lie behind the design and evaluation of the programmes, and how the theory of change is formed in the governance of

ESE. We present an example for its possible replicability. In addition, the specific objective will be how research with a direct relationship with the administrations could contribute to these evaluation processes by highlighting the challenges and virtues, and particularly, proposing improvements to the assessment.

This specific objective corresponds to: 'Governance and evaluation in local Environmental and Sustainability Education: a critical analysis of assessment instruments'. *Environmental Education Research (Submitted).*

In summary, our research aims to draw practical conclusions for future application. The ultimate objective of the study is to formulate criteria for a successful educational design and implementation that allows a change and a transformation towards sustainability through education, taking into account the perspectives of key agents of compulsory secondary education.

These are the research questions that guided our work:

1. What direction should environmental education follow to path the way for an integrated sustainable future?
2. What is the perspective of secondary school teachers regarding environmental and sustainability education? Do they take an active participant role in their school Agenda 21? What are the challenges and opportunities they identify?
3. How do secondary school students' perceive Environmental and Sustainability Education (ESE) programmes? What are the areas of action they identify as main ones to work on? How do they see themselves into identified specific problems and actions? What are their thoughts on the environmental programmes implemented by the school to tackle problems and actions?
4. To what extent does the assessment instrument used by the administrations implementing ESE reflect their theory of change? What is the tendency in the design and evaluation processes of administrations in ESE and how can research contribute to it?

7.3 Area of study

The Basque Autonomous Community (BAC) is a territory of 2.17 million inhabitants (Eustat, 2020), that is, it holds a density of 300 inhabitants per square kilometer. Despite being a highly urbanized territory, it is characterized by a culture related to the natural environment and local gastronomy, so both aspects have great potential in the territory as an element of access to the transition towards sustainability. In the educational field, the specificity of the Basque Country is that even if it is part of the Spanish State, it has Education competency (among others), so Education for the Sustainability of Basque schools is implemented and directed by the Basque Government.

Encouraged by the increasingly international context, in 1990 the first Center for Didactic Education and Environment Research (*Centro de Extensión Universitaria y Divulgación Ambiental* in Spanish, CEIDA) was created in the Basque Country. CEIDA centers are support centers for environmental education, aimed mainly at non-university teachers, created through an agreement signed between the Department of Education, Universities and Research of the Basque Government and the Department of Urban Planning, Housing and Environment (Basque Government, 1989). Later, in 2005, the CEIDA centers were renamed as Ingurugela.

The School Agenda 21 began to be implemented in 2003 and became the backbone of environmental education in the educational centers of the BAC, with the collaboration of Ingurugela advisers. The School Agenda 21 is an education program for sustainable development. It is defined within the "research and experimentation" line of work of the Ingurugela centers.

Likewise, other initiatives have emerged from civil society, non-governmental organizations and environmental groups. Currently, both public institutions and actors within civil society have opted to move from the School Agenda 21 to the 2030 Agenda, focusing on its comprehensive and holistic vision.

In this research, we take the public entity Ingurugela as a benchmark for environmental education in the BAC, in line with the defined objectives, although this issue has also been worked on in different institutions. The Ingurugela centers are support structures

for teachers to promote education for sustainability in centers wihtin non-university educational system. Once the public administration of the Basque Government identified the need to advise on and develop plans to foster environmental education, Ingurugela was created in 1990 by the Environment Department and the Department of Education of the Basque Government. Currently the Ingurugela network is made up of 5 offices spread over Bilbao, Vitoria-Gasteiz, Donostia, Eibar and Legazpi, with 15 teachers in total (12 advisors, 2 collaborators and a person in charge of the paperwork). Ingurugela depends on the Department of the Environment and Territorial Policy and the Department of Education, Educational Policy and Culture of the Basque Government.

7.4 Methodology

7.4.1 Conceptual analysis

In order to meet the main objectives of this thesis, the methodology was structured around different steps. Firstly, we identified the need to examine the creation and evolution of the environmental education and education for sustainable development concepts, in order to establish a background to the progress of the approach.

Secondly, in order to answer the research question regarding what direction should we take in the field of education within the framework of the international Agenda 2030, learning for sustainability (Christie, 2017) and sustainable education (Sterling, 2004) approaches have been taken as references. Those concepts were considered as the most importante ones after conducting an in-depth bibliographic exploration in the largest academic database, that is, the Web of Science, during the period 2000–2019. This research was undertaken using the keywords "environmental education", "education for sustainable development", "education for sustainability", "learning for sustainability", and "sustainable education". The last two concepts yielded the smallest number of publications; however, those are also emerging concepts for the era of the 2030 Agenda, due to their comprehensive vision, and for this reason, were taken as references.

In order to test the hypothesis, a content analysis of the main publications regarding these concepts was carried out. Moreover, other concepts derived from those have also been taken into consideration in the analysis and study.

7.4.2. Examining the perception of teachers: in-depth interviews and observation

The data obtained from the analyzed schools was mainly collected using a qualitative methodology. Individual semi-structured in-depth interviews were chosen as the main tool, since our selected sample "does not aim for statistical representation, but for a socio-structural typological representation corresponding to the objects of study" (Valle, 2007, p.68). In total, 38 interviews were conducted with secondary school teachers at five different schools of the BAC. We chose to analyze this topic from the perspective

of the teaching staff, as we considered that they play an indispensable and decisive role in generating a type of education based on values oriented towards sustainability. It is worth highlighting that a variety of different profiles were chosen for interview among the teaching staff in order to achieve a diverse sample that would be as unbiased as possible regardless of the subjects taught by each of them. These interviews were conducted by the researcher between April and June 2018, followed by different observation visits to each school. Similarly, the head teachers of the different schools issued a letter agreeing to the school's participation in this research.

Thus, to design the interviews we used the Wengraf decision-making scheme with the following steps: (1) Definition of goals and central research questions (CRQ); (2) Translation of each central question into three and seven theoretical questions (TQ); (3) Taking into account the type of interviewee or informant, design and development of a series of interview questions (IQ) or interview interventions (II) for each theoretical question. Similarly, in order to carry out point 2, the scheme proposed by Kvale was taken as a reference (Kvale, 1996, p. 131) (p. 131) (see page 158).

The analytical approach employed when dealing with the material transcribed from the interviews, consisted basically of an interpretative, socio-linguistic and semiological discourse analysis. This involves a 'qualitative paradigm' (Lindorf & Taylor, 2002, 17. or.), in so far as it is associated with interpretative epistemology (the intersubjective dimension), focusing on the individual subject and in discovering the meaning, motives and intentions of their activity (Garsten, 2010, 66. or.).

7.4.3 Methodology to analyse students' insights

Discussion groups and active observations –making use of a semi-structured field diary with guidelines– during visits to the centres were used as main methodological tools to study the perception of students. This part of the field study was conducted between January and June 2019. The first meeting conducted in the form of a discussion group was based on the main research questions. Subsequently, the designed dynamics were developed through the Golden Circle as a reference (see page 204, Appendix I) (Sinek, 2015). This tool seeks to deepen and reflect on the reason and sense of the performing

of certain actions. In the specific context of this research, the objective was to raise debate and reflection on the important points from the viewpoint of the subjects investigated in reference to education for sustainability. After this dynamic, the information gathered was shared and a road map was designed (see page 205 Appendix II) for the students to use as a guide to observe and analyse their school and family milieus. In this manner, we sought for the direct involvement of the students, thereby, making them active participants in the research.

A few weeks after obtaining the roadmap, a second meeting was held. We collected students' data in reference to their family and school environments through another series of discussion groups. The research process through discussion groups was consistent with the strategy of the subjects in process (Ibañez, 2015), which is why this methodological tool was considered adequate to answer the research questions and objectives.

A total of eight meetings were held with four different groups of students. These groups were composed of 6 to 10 secondary school students from different courses. As previously mentioned, in the first meetings the discussion groups and dynamics were conducted to generate a roadmap to be used by the students as a research guide and to share the obtained results in the discussion group of the second meeting (through the observation and analysis of what was defined in the road map).

Likewise, to complete the data obtained by the discussion groups and understand the reality of the centre in reference to the defined research objectives, ethnographic methodologies were also implemented. Ethnography includes qualitative methods that understand the reality in a holistic way, such as the observation of social routines, formal and informal interviews, or the analysis of documents and objects (Lindlof and Taylor, 2002, p. 17), such as annual reports on the SA21 activities of the centre and memories of the Ingurugela centre, among others. In addition, the informants of the investigation and the space of their main actions are known; "it means understanding the perspectives and problematising the accounts of organisational actors, spatial and temporal, and exploring their local and translocal contexts" (Garsten, 2010, p. 66). In the analysed visits to the centres, informal observations and conversations were conducted and systematised in each field diary. Likewise, there were opportunities to

exchange ideas around the subject in informal spaces such as annual meetings and conferences of teachers and students, thereby allowing the researcher to expand the data and information with different sources and actors involved. In order to systematically obtain information from the observations, a script was defined for the field diary.

7.4.4   Research Sample

When defining the schools for inclusion in the sample, we selected those certified as sustainable schools by the Basque government, to guarantee a certain level of commitment and the realization of activities framed in the SA21 project (Martínez et. al., 2017, pp. 41–42). Similarly, we selected schools located in different socio-economic and geographical settings to obtain a diverse sample.

At schools considered sustainable, each year they deal with a specific topic and they design and carry out relevant activities around it. For example, the topic of the year might be climate change, waste or circular economy and the school creates and establishes activities around that central axis. Below we show the profiles of the schools where we carried out the study –at the request of our interviewees, no names are given so as to avoid generating stigmas–.

- School A: This is a public school located in an urban area. At this school, they have been working with School Agenda 21 since 2004, and it has been certified as a sustainable school since 2009, a certification that has been renewed every 4 years.

- School B: This is a public school located in a municipality considered to be semi-rural. The link between School Agenda 21 and the municipality were the school is located is particularly close as it is the only school in the town. They have been involved in School Agenda 21 together with Ingurugela since 2001 and it was certified as a sustainable school in 2010, which was subsequently renewed in 2018.

- School C: This is a private school located in a semi-rural area. The School Agenda 21 project has been operating in the school since 2007 and they obtained recognition as a sustainable school for the first time in 2016.

- School D: This is a private school located in a semi-urban municipality. The

School Agenda 21 project has been put into effect in this school since 2007. They obtained recognition as a sustainable school in 2014. The majority of the students in this school are from that same municipality, with the result that they have a direct link with the town in relation to the local A21.

- School E: This is a private school located in the city center of Vitoria, the capital of the province of Alava and the political capital of the Basque Autonomous Community. The School Agenda 21 project has been in effect in the school since 2007. They obtained recognition as a sustainable school for the first time in 2009–2010, and it was renewed for the next four years in the 2017–2018 school year.

The participating groups of the students were selected taking into account certain criteria and with the help of the SA21 coordinators of the centers; thus, the groups were selected jointly by the researcher and the coordinators. In order to get the participation of the four courses of Compulsory Secondary School, we selected 2 people per course, that is, 8 students, as participants.

In addition, at least one person from each group has participated or participates as a current eco-representative, that is, they are in charge of transferring the A21E projects to their colleagues. The objective of this study is to know the attitudes and perceptions about environmental education at a specific moment, thus, even if during the investigation, before or after it there may have been changes in the behavior of the students, we have not measured them, because doing so was not the objective of the investigation.

7.4.5 Analysis of the assessment tools

Every theory of change defined by experts on the subject at hand, must have an evaluation system, given that in the educational system there is a tendency to evaluate and measure, that is, both to obtain results and to justify funding. In the ESE field, financing is one of the weak points (UNESCO, 2016), so there is this need of evaluation. On the other hand, policies are also based on these results to advance in one direction or the other (Pizmony-Levy, 2011).

We analyze how data is usually evaluated and how it is used, to understand how the survey tools shape our vision. So it is relevant to take a step back and, instead of analyzing the data, analyze the instrument of evaluations or the artifact itself. Regarding Schein's OC model, the artifact is the survey that gives us a clue as to the underlying norms and values and how the theory of change is formed in the governance of ESE. In this regard, we have provided an example for its possible replicability. Furthermore, we complemented our specific study with ideas from key stakeholders in the administration that implement ESE in the Basque Autonomous Community.

It is relevant to emphasize that questions are a central and basic aspect of survey research. As Maria José Azofra states 'the reliability and success of the data collection and therefore of the research depends on the choice and correct statement of each question' (Azofra 1999: 9). Language as a social symbol provides to the interviewee clues about the type of person the other is. In order to improve communication, the interviewer should not make as much effort in trying to speak the same language as the interviewee as in trying to achieve a responsive attitude and making her or him feel that the interviewer understands what she or he says (García Ferrando & LlopisGoig, 2015).

Coding is a method for finding descriptive information. Designing a survey involves a specific process of writing and thinking about the questions, options, type of questions, and measuring validity. In this research, we analyze the content of the questionnaire, accepting that its design has been validated and is reliable. In order to answer research question 1 of this research, we coded the survey, guided by the aim of the research question and objectives. As it is shown below, in Table 1 we have defined the analyzed section, the coding variable and a description of the section.

Coding section	*Variable*	*Description of the section*
Type of questions	Open-ended	Through this section we would like to look at the type of question they use because they will gives us information about the type of expected information or answers.

Where is the focus?	School Municipality Coordinator Administration	In order to know where the attention is placed.
Who is the focus? Stakeholders' engagement	Students Coordinator Teacher School administration Families Others All	In this section we want to see to what extent the stakeholders' engagement is measured and taken into account for assessment, who is the main target, or the importance of some actors or others.
What is the educational aspect?	Curriculum Co-curriculum (informal/outdoor) Facilities/school management, Others	This section is about the educational aspect they are working on, that is, what educational aspect do they pay attention to.
Type of engagement	Knowledge Attitudes Environmental Behaviour Participation	What type of impact are they looking for.
Sustainability pillar that gives reference to	Environmental Social Economical Combination (2) All (3)	What sustainability pillar do they focus on.
Sustainability topic	Energy Waste Biodiversity Climate Change Health/wellness Food	What topics do they work on and measure.

Others
Action
Analysis
Awareness
Organization
Communication
Satisfaction
Impact
Coordination
School-Municipality

Others

Table 1: Survey coding information

The study is complemented by 5 semi-structured interviews (conducted in December 2019) with 4 key stakeholders of the administration (Ingurugela) regarding the program, their perception of it and evaluation.

7.4.6 Data analysis

We have carried out the previously described methodology sections (interviews, group discussions) through a methodology called content analysis. The content analysis methodology considers the set of interrelated concepts as a conceptual reference framework. These concepts are useful for analysis as well as for evaluating any already conducted content analysis (Krippendorff, 1990). In order to do that, the interviews, meetings and discussion groups were recorded –with a voice recorder– so that all the information obtained could then be transcribed. In the case of interviews, we analyzed them by topic. In the case of focus groups, these transcripts were compiled into a content unification box, and we selected them by referring to the items that students considered a priority when talking about the topic of the research. We analyzed the data in the evaluation questionnaire using the Statistical Package for the Social Sciences (SPSS) program in order to explore the obtained data. Through this program, designed coding and variable data can be entered for analysis. Among other things, it makes numerical statistics, graphs and crates relationships between variables.

7.5 Results and discussion

Main results of the study are deeply described in each paper (Section III, page143). In this section, we are going to summarize the main results and discussion of ach of them.

7.5.1 *Understanding terminology: education and sustainability for theory and practice*

Different paradigms respond to their respective historical contexts. Concepts evolve and change, as do the priorities and needs of each moment. Taking into account the current socio-environmental crisis, an in the era of de Agenda 2030, it is necessary to address the problem from a holistic view.

Therefore, we choose and justify the learning for sustainability (LfS) focus. However, in the various local contexts of educational practice, that is, in schools, the most used and familiar concept may not always be the one that is more holistic or ideal. For example, in the case study of the research, through the School Agenda 21, the most common concept is Environmental Education, and teacher will most of the times make reference to that terminology. Nonetheless, it is considered necessary to start moving from environmental education to education for sustainability in order to generate changes in mentalities and integrate the concept of sustainability (Agirreazkuenaga, 2019) understanding it holistically and comprehensively for action without being exclusive of one over the other.

Conceptualization is important, since words contribute to the explanation of social realities, interactions with the environment, and the generation of new concepts in practice; "science deals directly with concepts and not with 'realities ', because the integrating units of scientific discourse are concepts and not directly with reality or phenomena. The concepts are, in turn, mental constructions, are constructs, abstractions extracted from objects and concrete real events" (Bautista Vallejo, 2001).

In the framework of education, the use of sustainability concept, which has integral and holistic implications (unlike what is associated with the word 'environmental'), can generate changes through its use in the mentality of how to address the problem and the socio-environmental crisis. Currently, the term 'sustainability' may be often used

without linking it to the social dimension, for example by only associating it with environmental sustainability. However, that does not mean that this knowledge cannot also be integrated, and by incorporating the word into the discourse, it can facilitate the transition to the changes in mentality that are sought. For example, regarding the teacher interviewd in our case study, sustainability means a balance between what we consume, the productiona dn the abailable materials in the earth, but still, is more related to the environmnetla pillar (Agirreazkuenaga, 2019).

In terms of education for sustainability and its teaching in a holistic and integral way, certain methodologies help to generate spaces where the subject of sustainability traverses and works through different fields of knowledge, such as outdoor education.

The current theoretical frameworks of education for sustainability must be embedded in the educational curricula of the teaching staff at teachers' training colleges to promote awareness and develop sustainability skills in students, who are the future teachers. "Sustainable education" and Education based in values are necessary holistic, educational paradigms that advances towards a sustainable culture and lifestyle. It is recommended that for programs on Education for Sustainability to be successful, these "must be holistically integrated into the curriculum and institutional practices" (Steverson, 2007), as they would not work solely on the basis of the individual efforts of some educators.

7.5..2 Sustainable Development Goals as a framework for Education for Sustainability

In the line with what we mentioned above, the results show that one of the keys to success lies in approaching the topic with a holistic or interdisciplinary view, that is, not treating it as a separate school subject understood as "environmental education" or solely in relation to the natural sciences, but instead as something embedded in the curriculum and the study plan of each school subject. In spite of the fact that some schools are already doing this, it continues to pose a challenge, although attention is now being focused on it. It is a question of developing an education in which the concept of sustainability is embedded in a natural way, with education understood as

forming a whole. "Schools must teach students about the world we live in, our place in it, and how to sustain and protect the ecosystems that support us all" (Saylan & Blumstein, 2011). Education for sustainability requires an interdisciplinary approach that encourages critical thinking and resolving complex problems, which must be addressed from more than one discipline (Zoller, 2012). Environmental sensibility is in general understood in terms of recycling, sustainable consumption and visits to natural parks, while cultural sustainability is not well-known (Janhonen-Abruquah et al., 2018). In this sense, Agenda 2030 of the SDGs provides an opportunity if it is considered as an accessible tool for starting to work on sustainability in a more integral way, since the SDGs provide a framework for integrating all the educational subjects and projects. In this context, it is crucial for the effectiveness of education for sustainability that the teachers should receive a specific qualification through the educational offers aligned with the United Nations' SDGs (United Nations, 2015).

7.5.3 The attitude of the teaching staff

Environmental education is a tool with a high potential for contributing to social transformation towards a sustainable lifestyle. Education and educational centers play a leading role in implementing sustainable development (Bertschy et al., 2013). Education has a key role to play in activities on the path towards a more sustainable future, although educational practice must be specifically adapted to its target audiences (Pauw et al., 2015). In the specific field of formal education, in all the cases studied in this research, the teaching staff are the key element for successfully putting the programs of environmental education into practice.

In this respect, we observed that individual awareness and sensibility determines the motivation, and thus the work that is done in the school. Our research underscores that the great majority of the teaching staff show concern for the environment; nonetheless, it also reflects the scant commitment to an active pro-environmental position in the classroom or in the personal sphere. Studies carried out from the perspective of environmental psychology, like that of Thomson and Barton (1994), show that in spite of holding values that favor the environment, it is difficult to change personal behavior and involve oneself in change, especially if this calls for sacrifices or involves inconvenience (Thompson & Barton, 1994). Some reasons are identified that might

affect this disconnection between a pro-environmental attitude and behavior, which tend to contradict each other. There are several models that analyze this relation amongst values, attitude and conduct, such as Schwartz's scale of ecological values (Schwartz & Bilsky, 1987), Dunlap and Van Liere's methodological tool—the New Ecological Paradigm (NEP) (Dunlap et al., 2000; Dunlap, 2008) or Hines, Hungerford and Tomera's model (Hines et al., 1987). What all of these models agree upon is that initially it is necessary to possess information and have a good understanding of the problem, and that the corresponding behavior will come later. It must be borne in mind that the teaching staff are a part of society and therefore their concern about the environmental problem is not necessarily linked to their classroom work, as our study clearly showed.

The current theoretical frameworks of education for sustainability must be embedded in the educational curricula of the teaching staff at teachers' training colleges in order to promote awareness and develop sustainability skills in students, who will be the future teachers. 'Sustainable education' is a necessary, holistic, educational paradigm that advances towards a sustainable culture and lifestyle (Sterling, 2004). It is recommended that for programs on Education for Sustainability to be successful, these "must be holistically integrated into the curriculum and institutional practices" (Chinedu et al., 2018), as they would not work solely on the basis of the individual efforts of some educators. In this sense, it is important to analyze from the perspective of the Sociology of Education, how teachers are trained to deal with the topic of sustainability (Caballero Guisado & Baigorri Agoiz, 2018).

7.5.4 (Re)connecting with nature

From an analysis of the specific activity of educational projects for sustainability, we can deduce that one of the keys to successful implementation that manages to get people involved and raise their awareness lies in carrying out activities in which they participate. This implies the development of an activity that entails experiencing direct contact with reality and with nature. There is a relation between reconnecting people with nature and their subsequent progress towards a greater environmental sensibility. Recent research carried out in primary and secondary schools in Singapore has shown that, "Nature connectedness counts as a crucial predictor of pro-environmental

behavior" (Braun & Dierkes, 2017). Similarly, there have been recent research experiences, in Scotland and Canada amongst others places, which showcase the potential of outdoor education for developing pro-environmental sensibility (Crone & Dahl, 2012; Higgins & Kirk, 2006). Although the potential of experiences outside the classroom is recognized, the teaching staff bring up certain problems, such as the time availability and budget limitations, to carrying them out.

It is also important to underscore the age at which this type of activities is carried out. In fact, one of the results of our research shows that working with adolescents provides interesting challenges and opportunities, a finding that is also shown by other studies (Braun & Dierkes, 2017). Kapalan and Kapalan argue that during adolescence, there is less preference for natural spaces as opposed to more 'developed' spaces. They call this period 'time out', when there is a loss of interest in things related with nature (Kapalan & Kapalan, 2002). On the other hand, Crone and Dahl stress the importance of social and affective research as variables for exploring immersion and for better understanding the opportunities for motivational apprenticeship during adolescence in reference to the subjects covered (Nazir & Pedretti, 2016).

7.5.6 Students' perception of Sustainability Education and its positioning in the identified problems

The results of our research show that there is a disconnection between theoretical programs of environmental education and the perception and awareness of students, with their movement to action. This gap has also been observed in other studies (Cebrián and Junyent, 2015). It is necessary to create a more concrete level of practical situations, such as envisaging a sustainable future, and the role of each student on the path towards achieving it. Some authors have also highlighted the need of an holistic effort within and across courses in teaching institutions to led students to reflect on sustainability from a whole point of view (Zeegers and Clark, 2014).

The competences in sustainability must be able to address the problems in the social and political sphere, but these competences must also work at a personal level by guiding individual decisions and lifestyles (Stoof et al., 2002). This double perspective, namely systemic and personal, requires different approaches for the development of skills.

These approaches, which involve cognitive and non-cognitive/affective methodologies, can motivate students to become committed citizens to a sustainable future (Delouhá et al., 2019).

Old habits form a very strong barrier, and the desire for comfort plays an important role in the shaping of pro-environmental behaviours. In this research, the idea that family customs influence people's attitudes was reinforced; if the dominant culture propagates an unsustainable lifestyle, then it is more difficult to have pro-environmental behaviour and the gap between attitude and action will be expanded (Kollmuss and Agyeman, 2010). The use of a positive perspective in the discourse is convenient for dealing with the socio-environmental crisis given that having hope is not only a pleasant feeling, but also can function as a motivating force if one controls denial (Ojala, 2012).

The School Agenda 21 program seeks to generate critical citizenship that is capable of reflecting and building its own ideas. However, in practice, it is not very clear how to consistently conduct some of the proposals emanating from the constructivism to promote the formation of values through discussions among schoolchildren about specific social problems and behaviours that can be assumed in front of them. On a rational level and in the school environment, students can display ethical and moral values in the face of human rights and the environment, but they can present different behaviours when going out to the playground or leaving the school (Díaz Barriga, 2006). The students of the study sample considered that the subject of environmental education should have more presence in the school schedule, to generate a real impact on attitudes and habits, and to make the actions taken more stable.

As mentioned before, rethinking the pedagogical model and starting to incorporate active tools and methodologies is necessary for the transformation (Steverson, 2007). A key element shown in the results is the need of incorporating the students in the process of defining activities in SA21; the students of the case study do not feel themselves part of the program as they think they should be. In other studies at the university level, it has been shown that the participation of students in the development of ESD programs is key for student satisfaction and confidence in the institution (Perrello-Marín et. al., 2018). To take into account the students' voices and empower them to participate in the decision-making process and activities of the educational centre creates a situation of

harmony in which ESD is much more effective. They also have more responsibility in the learning process itself (Perello-Marín et. al., 2018). To promote the prominence of the people involved in environmental education projects and generate a situation of co-creation of knowledge with the participation of students (Chawla, 2008) is necessary for the development of more successful programs because the students are the centre of the learning process.

7.5.6 Students' insights on the way school addresses the environmental program

One of the interesting results from students' focus groups is that they understand the importance of imply in actions towards sustainability, not only themselves, but the managers of the centre and also families and friends. It is fundamental to secure collective decisions and activities between students, teachers, families and the whole community.

Students also perceive in the adult world what in psychology is called double messages, namely one message on how to act and another message on performance (from parents, teachers, and various social actors, such as broadcasters, actors, and politicians), which works in an opposite manner to what has been previously affirmed (Díaz Barriga, 2006). Environmental education has the challenge of working against the current if the messages of certain policies or multinationals are moving in the opposite direction of sustainability. Therefore, it is necessary to take into account the vision of the students, to encourage action with coherent management of the referents' attitude (in this case, of the academic centre) without generating frustration. For this reason, educational programs aligned with Education for Sustainability must be designed and implemented holistically (Jackson and Pang, 2017). In the context of a curriculum of wholeness towards sustainability, the systems thinking and practice will help to reflect about where we are going as a universal society (Lazlo, 2012).

The centres, as much as possible, have the responsibility of leading problem-solving actions. The same management of the centre can play a relevant role; examples where creative projects have been initiated can be used as a reference because they have transformed the life at university campus and have had an impact on the attitudes and behaviour of staff and students (Adombent et al., 2014). This vision is in line with the

experiences of whole-school community developed in schools in Melbourne, presenting an approach to embody their meaning of sustainability on a daily basis, based on a systemic whole-school approach (Bosevska and Kriewaldt, 2020).

7.5.7 *The research[1] contribution to the design and assessment process of administrations in ESE*

Understanding how ESE programs work is as important as knowing what works for a successful implementation and what does not work. Consequently, program evaluators will have to investigate not only program outcomes, but also program influence and processes (Rickinson et al., 2016). In this way, the evaluation should include information about what works well for whom and in what conditions. All participants in the process, such as funders, coordinators, teachers, together with researchers, have to work together to develop an indication about the influence and impact of ESE programs. In the study case, the type of evaluation reflects a high concern with participation, there is a high percentage of items in relation to this and a high commitment from the different stakeholders, which is one of the keys for achieving successful results. The evaluation instrument analyzed also reflects that the administration finds the level of engagement of the person in charge of the coordination of the program in each school especially important, which might generate a greater responsibility in this person. We can see these reflected with the responses that the coordinators give us (in depth interviews), when they indicate that they feel that a huge part depends on them.

However, as in some other cases, in the questionnaire studied the greatest number of questions was in relation to the program itself and to the school, without many references to what happens once the students leave the school. Moreover, in the questionnaire there are no items referring solely to the economic or the social pillars of sustainability. This may be due to the specific emphasis of the Agenda on a topic for

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[1] We understand research as the action of obtaining conclusions and presenting them to decision-makers (Alkin & Vo, 2017), whereas evaluation makes a judgment and provides recommendations for program improvement.

each educational center, given its context. A large part of ESE evaluation research tends to direct attention to the features and objectives of single programs (Stern et al., 2014), which limits the capacity of researchers to understand the effect of the context (Carleton-Hug & Hug, 2010). However, measuring a broader set of outcomes would improve the ability to achieve broader results and draw more lessons (Hollweg et al., 2011). Program developers should be willing to make explicit not only what activities a program involves, but also how it leads to the *theory of change.*

Although environmental behavior and attitudes are very important issues in ESE, these items do not have an important presence in the evaluation tool analyzed here. There is broad recognition that knowledge growth does not necessarily produce a change of behavior, and that such education programs that focus mainly on providing new knowledge should not be expected to influence behavioral outcomes (Ham, 2013). However, knowledge is the most commonly measured outcome in evaluation programs (Stern et al., 2014), which might be because school curricula focus more on knowledge provision, or because programs are failing to pursue behavioral results. Previous studies have proposed employing methods of evaluation focused on both cognitive and behavioral components, to better indicate success in the matters addressed (Thomas et al., 2019). In relation to the evaluation system, one reason might be that researchers are failing to measure behavioral outcomes, or simply that knowledge is easier to measure.

Researchers could potentially play a stronger role, not only in ensuring appropriate measurements, but in enhancing program design and reformulation (Monroe, 2010). The ESE evaluation research has a high potential for supporting and improving educational programs. For instance, in this case study reinforcing items in relation to the outside socio-economic environment and in relation to attitude and behavior, would reinforce the necessary educational actions on the road towards sustainability. Moreover, the ESE program would be enhanced if the coordinator was not directly responsible for answering the evaluation questionnaire, but was supported by external evaluators instead. In any case, a variety of methods and approaches are needed to evaluate program success because useful resolutions in one context may not be helpful in another.

Regarding questions that bring out where the focus of the work is placed, the majority of these focus on the administration of the educational center, which refers to the management of the center in relation to sustainability. However, students should have a greater leadership role in the educational process, as they are its real protagonists. The organizational context of the schools can be a limitation for some evaluation programs, nonetheless these evaluations can be an instrument for changing the norms and values, and for identifying and guiding the theory of change we want to develop. Assessments should be conducted with consistency and scientific rigor, especially in education, where results are complex and hard to perceive (Thomson et al., 2003). In the field of environmental education there is a real need for training in community evaluation issues, because teachers and other education professionals are not necessarily specialists in conducting evaluation programs.

As stated before, we have some clues about that through research and in the politics and programs implemented by the administration; normally they base their program designs on evaluations. How to conduct an assessment, which instrument to use and what to measure is one of the biggest issues and discussions in the educational field; even more so in Environmental Education, as what we want to measure is frequently not knowledge (as usual), but attitudes or behaviors.

8. ERREFERENTZIAK/REFERENCES

ACNUR. (2001). Debemos proteger el medio ambiente en las situaciones de refugiados. Available: http://www.acnur.org/biblioteca/pdf/1294.pdf?view=1

Agirreazkuenaga, L. (2019). Embedding Sustainable Development Goals in Education. Teachers' Perspective about Education for Sustainability in the Basque Autonomous Community. *Sustainability*, *11* (5), 1496.

Agirreazkuenaga, M., Cantera, A., Gutiérrez-Bastida, J.M., Martinez, J. (2017). *Ecobarómetro Escolar de la comunidad autónoma del País Vasco 2016.* Ingurugela. Departamento de Educación Universidades e Investigación y Departamento de Ordenación del Territorio, Vivienda y Medio Ambiente. Gobierno Vasco. Vitoria/Gasteiz, Spain. https://www.euskadi.eus/contenidos/documentacion/ecobarometro_escolar/es_def/adjuntos/ECOBAROMETRO_2016.pdf

Aikens, K., McKenzie, M., & Vaughter, P. (2016). Environmental and sustainability education policy research: a systematic review of methodological and thematic trends. *Environmental Education Research,* 22 (3): 1-27. https://doi.org/10.1080/13504622.2015.1135418

Akainji, B., Mordi, C., Adisa, T., & Ajonbadi, H. (2019). *The Influence of Organisational Culture on Leadership Style in Higher Education Institutions.* Emerald Publishing Limited. UK. https://doi.org/10.1108/PR-08-2018-0280

Al Issa, H.-E. (2019). Organisational Culture in Public Universities: Empirical Evidence. *Asian* Journal *of Business and Accounting AJBA*, *12* (1): 41-70.

Alkin, M. C., & Vo, A. T. (2017). *Evaluation essentials: From A to Z.* Guilford Publications. NY, USA.

Alonso, L. (1998). *La mirada cualitativa en sociología*. Fundamentos. Madrid, Spain.

Ambusaidi, A., Boyes, E., Stanisstreet, M., Taylor, N. (2012). Omani students' views about global warming: beliefs about actions and willingness to act. *International Research in Geographical and Environmental Education,* 21, 1.

Argibay, M., Celorio, G., & Celorio, J. (2009). *Educación para la Ciudadanía Global. Debates y desafíos.* Hegoa. Instituto de Estudios para Desarrollo y Cooperación Internacional (UPV/EHU). Bilbao, Spain.

Atkinson, H., Wade, R. (2015). *The challenge of sustainability. Linking Politics, Education and Learning.* Bristol University Press. Bristol, UK.

Bannon, I., Collier, P. (2003). *Natural resources and violent conflict: Options and actions.* The World Bank. Washington, D.C. USA.

Basiago, Andrew D. (1995). Methods of Defining Sustainability. *Sustainable Development* 3 (3): 109-19. https://doi.org/10.1002/sd.3460030302

Bauer, D., Arnold, J., & Kremer, K. (2018). Consumption-Intention Formation in Education for Sustainable Development: An Adapted Model Based on the Theory of Planned Behavior. *Sustainability*, 10 (10), 3455. https://doi.org/10.3390/su10103455

Bautista Vallejo, J. M. (2001). Actitudes y valores: precisiones conceptuales para el trabajo didáctico. *Arias Montano. Universidad de Huelva,* 3: 189-196.

Beames, S., Higgins, P., & Nicol, R. (2012). *Learning outside the classroom: Theory and guidelines for practice.* Routledge. Edinburgh, UK.

Begon, M., Harper, J., & Townsed, C. (2006). *Ecology. From Individuals to Ecosystems.* Backwell Publishing. London, UK.

Benavot, A. (2014). *Education for Sustainable Development in Primary and Secondary Education.* Department Education for Sustainable Development UNESCO. Paris, France.

Benayas, J., & Marcén, C. (2019). *Hacia una Educación para la Sostenibilidad. 20 años después del Libro Blanco de la Educación Ambiental en España*. Centro Nacional de Educación Ambiental (CENEAM), Organismo Autónomo Parques Nacionales, Ministerio para la Transición Ecológica. Madrid, Spain.

Benito Iza, J., Gutierrez Bastida, J. M., Hernandez Abaitua, R., & Marañon Zalduondo, J. (2008). *Educar para la sostenibilidad: Guía de la agenda 21 escolar. Education for sustainability; Scho agenda 21 gide*. Servicio Central de Publicaciones del Gobierno Vasco. Vitoria/Gasteiz, Spain.

Berger, P., & Luckman, T. (1967). *The sociology construction of reality: a treatise in the sociology of knowledge.* Penguin. London, UK.

Bermejo, R., Arto, I., Hoyos, D., & Garmendia, E. (2010). *Menos es más: del desarrollo sostenible al decrecimiento sostenible.* En Cuaderno de Trabajo 52. Hegoa. Instituto de Estudios para Desarrollo y Cooperación Internacional (UPV/EHU). Bilbao, Spain.

Bertschy, F., Künzli, C., & Lehmann, M. (2013). Teachers' Competencies for the Implementation of Educational Offers in the Field of Education for Sustainable Development. *Sustainability*, 5 (12), 5067–5080. https://doi.org/10.3390/su5125067

Bettencourt, L.M., Kaur, J. (2011). Evolution and structure of sustainability science. *Proceedings of the National Academy of Sciences of the United States of America* 108: 19549-19545. https://doi.org/10.1073/pnas.1102712108

Boeve-de Pauw, J., Gericke, N., Daniel Olsson, D., Berglund, T. (2015). The Effectiveness of Education for Sustainable Development. *Sustainability,* 7.

Bosevska, J., Kriewaldt, J. (2020). Fostering a whole-school approach to sustainability: learning from one school's journey towards sustainable education. *International Research in Geographical and Environmental Education,* 29: 55-73.

Boyes, E., Stanisstreet, M., Skamp, K., Rodriguez, M., Malandrakis, G., Rosanne W. Fortner, R.W., et al. (2014). An international study of the propensity of students to limit their use of private transport in light of their understanding of the causes of global warming. *International Research in Geographical and Environmental Education,* 23, 2.

Braun, T., & Dierkes, P. (2017). Connecting students to nature – how intensity of nature experience and student age influence the success of outdoor education programs. *Environmental Education Research,* 23 (7): 937-949. https://doi.org/10.1080/13504622.2016.1214866

Britton, A. (2018). Citizenship Education. In: Bryce, T. G. K., Humes, W. M., Gillies, D. & Kennedy, A (Eds). *Scottish Education*. Fith Edition. (pp. 533–537).

Brundtland, G.H. (1987). *Our Common Future. The World Commission on Environment and Development*. Oxford University Press, Oxford, UK.

Caballero Guisado, M., & Baigorri Agoiz, A. (2018). The climate change in the ESO. Exploring Extremadura case. *Revista de Sociología de la Educación (RASE),* 11: 89-100. http://dx.doi.org/10.7203/RASE.11.1.10618

Cairns, J. (2006). Designing for nature and sustainability. *International Journal of Sustainable Development and World Ecology*, 13: 77-81.

Carleton-Hug, A., & Hug, J. W. (2010). Challenges and opportunities for evaluating environmental education programs. *Evaluation and Program Planning*, *33* (2): 159-164.

Carson, R. (1962). *Silent Spring*. Houghton Mifflin Harcourt. Boston, MA, USA.

Castro, C. J. (2004). Sustainable Development: Mainstream and Critical Perspectives. *Organization & Environment*, 17 (2):195-225.

Catling, S. (2014). Giving younger children voice in primary geography: empowering pedagogy, a personal perspective. *International Research in Geographical and Environmental Education,* 23, 4.

Cea D'Ancona, M. A. (1998). El análisis de la realidad social: Aproximaciones metodológicas. In: Cea D'Ancona (Eds). *Metodología Cuantitativa: Estrategias y Técnicas de Investigación Social.* Síntesis Sociología. Madrid, Spain.

Cebrián, G. & Junyent, M., (2015). Competencies in Education for Sustainable Development: Exploring the Student Teachers' Views. *Sustainability,* 7 (3): 2768-2786.

Chang, C.H., Kidman, G. (2018). The future of education for sustainable development, where next after a decade of discourse?. *International Research in Geographical and Environmental Education,* 27, 4.

Chawla, L. (1994). Review of Alternative Paradigms in Environmental Education Research [Review of Review of Alternative Paradigms in Environmental Education Research, by R. Mrazek]. *Children's Environments*, 11(3), 256–260.

Chawla L. (2008) Participation and the Ecology of Environmental Awareness and Action. In: Reid A., Jensen B.B., Nikel J., Simovska V. (eds) *Participation and Learning*. Springer, Dordrecht. https://doi.org/10.1007/978-1-4020-6416-6_6

Chinedu, C. C., Wan-Mohamed, W. A., & Ogbonnia, & A. A. (2018). A Systematic Review on Education for Sustainable Development: Enhancing The Teacher Training Programme. *Journal of Technical Education and Training*, 10 (1). https://publisher.uthm.edu.my/ojs/index.php/JTET/article/view/1678

Crone, E. A., & Dahl, R. E. (2012). Understanding adolescence as a period of social-affective engagement and goal flexibility. *Nature Reviews. Neuroscience*, 13 (9): 636-650. https://doi.org/10.1038/nrn3313

Crowther, J., Hemmi, A., & Scandrett, E. (2012). Learning environmental justice and adult education in a Scottish community campaign against fish farming. *Local Environment*, 17 (1): 115-130.

Crutzen, P. J., Stoermer, E. F. (2000). The "Anthropocene". *Global Change Newsletter*s, 41: 17-18

Delouhá, J., Heras, R., Mulá, I., Perez Salgado, F., Henderson, L. (2019). Competences to Address SDGs in Higher Education—A Reflection on the Equilibrium between Systemic and Personal Approaches to Achieve Transformative Action. *Sustainability,* 11 (13).

Díaz Barriga, Á. (2006). La educación en valores: Avatares del currículum formal, oculto y los temas transversales. *Rev. Electrónica de Investig. Educ,* 8: 1-15.

Disinger, J. (1985). Environmental Education's Definitional Problem. *Search Education Resources*. *School Science and Mathematics*, 85 (1): 59-68.

Dunlap, R. E., & Liere, K. D. (1978). The New Environmental Paradigm. *Journal of Environmental Education*, 9: 10-19.

Dunlap, Riley E. (2008). The New Environmental Paradigm Scale: From Marginality to Worldwide Use. *The Journal of Environmental Education*, 40 (1): 3-18. https://doi.org/10.3200/JOEE.40.1.3-18

Dunlap., R. E., Liere, K. V., Merting, A. G., & Jones, R. E. (2000). Measuring endorsement of the New Ecological Paradigm: A revised NEP scale. *Journal of Social Isues,* 56 (3): 425-442.

Edmondson, A. C. (2012). *Teaming: How Organizations Learn, Innovate, and Compete in the Knowledge Economy*. Jossey-Bass, NY, USA.

Ehrlich, P. R. (1968). *The population Bomb*. Ballantine Books, NY, USA.

Eisner, E. W. (1998). *El Ojo Ilustrado. Indagación Cualitativa y Mejora de la Práctica Educativa / The Illustrated Eye. Qualitative Inquiry and Improvement of Educational Practice.* Paidós Ibérica, Barcelona, Spain.

Eustat, 2019. Consulted in URL:
http://www.eustat.eus/elementos/ele0011400/Poblacion_de_la_CA_de_Euskadi_por_ano_de_nacimiento_segun_el_territorio_historico_y_el_sexo/tbl0011424_c.html (accessed 12.3.19).

Eustat. (2017). Consulted in URL:
http://www.eustat.eus/elementos/ele0011400/Poblacion_de_la_CA_de_Euskadi_por_ano_de_nacimiento_segun_el_territorio_historico_y_el_sexo/tbl0011424_c.html

Eustat. (2019). Consulted in URL:
http://www.eustat.eus/elementos/ele0011400/Poblacion_de_la_CA_de_Euskadi_por_ano_de_nacimiento_segun_el_territorio_historico_y_el_sexo/tbl0011424_c.html

Flecha, R. (2011). The dialogic sociology of education. *International Studies in Sociology of Education,* 21 (1): 7-20.
https://doi.org/10.1080/09620214.2011.543849

Folke, C., Biggs, R., Norström, A. V., Reyers, B. and Rockström, J. (2016). Social-Ecological Resilience and Biosphere-Based Sustainability Science. *Ecology and Society,* 21 (3).

Frankel-Goldwater, L. (2011). *Permaculture as a Tool for Implementing the UN Decade of Education for Sustainable Development.* Final Project for the Master of Arts in Environmental Conservation Education, UNY. NY, USA.
https://cdn.permaculturenews.org/files/Permaculture_and_the_UN_DESD.pdf

Freire, H. (2011). *Educar en verde: Ideas para acercar a niños y niñas a la naturaleza.* Graó. Barcelona, Spain.

Frey, D. F. (2017). Economic Growth, Full Employment and Decent Work: The Means and Ends in SDG 8. *The International Journal of Human Rights,* 21 (8): 1164-1184.

García Ferrando, M., & Llopis Goig, R. (2015). La encuesta. In M. Garcia Ferrando, F. Alvira, L. E. Alonso, & M. Escobar (Eds), *El análisis de la realidad social. Metodos y técnicas de investigación (The analysis of social reality. Methods and techniques of research)* (pp. 331–362). Alianza Editorial. Madrid, Spain.

Garsten, C. (2010). Ethnography at the Interface. Corporate Social Responsibility as an Authropological Field of Enquiry, in: Melhuus, M., Mitchell, J.P., Wulff, H. (Eds.), *Ethnographic Practice in the Present.* New York: Berghahm Books, USA, pp. 56–63.

Giangrande, N., White, R. M., East, M., Jackson, R., Clarke, T., Saloff Coste, M., & Penha-Lopes, G. (2019). A Competency Framework to Assess and Activate Education for Sustainable Development: Addressing the UN Sustainable

Development Goals 4.7 Challenge. *Sustainability,* 11 (10), 2832. https://doi.org/10.3390/su11102832

Glaser, B.G., Strauss, A. L. (1967). *The Discovery of Grounded Theoy: Strategies for Qualitative Research.* Aldine. Chicago, USA.

Global Fotprint Network. (2018). *World Global Footprint.* Global Footprint Network. http://data.footprintnetwork.org/#/countryTrends?cn=5001&type=BCtot,EFCtot

Gobierno Vasco. (2016). *Estrategia de educación para la sostenibilidad del País Vasco 2030 - Basque strategy 2030 for Education for Sustainability.* Servicio Central de Publicaciones del Gobierno Vasco, Vitoria-Gasteiz, Spain.

Goldsmith, E., & Allen, R. (1972). A Blueprint for Survival. *The Ecologist*, 2, 1.

González-Gaudiano, E. (2006). Environmental education: A field in tension or in transition? *Enviornmental Education Research,* 12: 298-300. https://doi.org/10.1080/13504620600799042

Gore, T. (2015). *Extreme Carbon Inequality: Why the Paris climate deal must put the poorest, lowest emitting and most vulnerable people first.* Oxfam International. http://hdl.handle.net/10546/582545

Gough, A. (2016). The Emergence of Environmnetal Education Researc. A 'History' of the Field. In: Stevenson, R.B., Brody, M., Dillon, J., Wals, A. (Eds) *International Handbook of Research on Environmental Education* (pp. 13–22). Routledge, London, UK.

Greenwood, R. (2019). Pupil involvement in planning topics using KWL grids: opinions of teachers, student teachers and pupils. *Educational Studies,* 45: 497-519.

Groodland, R., & Daily, H. (1996). Environmental Sustainability: Universal and non-negotiable. *Ecological Applications* (6): 1002-1017.

Grosseck, G., Țîru, L.G., Bran, R.A. (2019) Education for Sustainable Development: Evolution and Perspectives: A Bibliometric Review of Research, 1992–2018. *Sustainability*, *11*, 6136.

Grueneward, D. (2003). The best of both worlds: A critical pedagogy of place. *Educational Researcher*, 32: 3-12.

Guerrero, A. (2007). The Double Contribution of Sociology to Teacher Training. *Revista Internacional de Sociología,* 48: 203–220.

Guzmán Alonso, J.I., Gutiérrez Bastida, J.M. (2009). *Hacia la sosteniblidad escolar. Criterios de calidad en educación para la sostenibilidad. Towards school sustainability. Quality criteria in education for sustainability.* Eusko Jaurlaritza Argitalpen Zerbitzu Nagusia. Vitoria-Gasteiz, Spain.

Ham, S. (2013). *Interpretation: Making a difference on purpose.* Fulcrum publishing. CO, USA.

Hardin, G. (1968). The Tragedy of the Commons. American Association for the Advancement of Science. *American Association for the Advancement of Science,* 162: 243-1248.

Hardoon, D., Fuentes-Nieva, R., Ayele, S. (2016). *An Economy for the 1%: How privilege and power in the economy drive extreme inequality and how this can be stopped.* Oxfam International. https://www-cdn.oxfam.org/s3fs-public/file_attachments/bp210-economy-one-percent-tax-havens-180116-en_0.pdf

Henderson, K & Tilbury, D. (2004). *Whole-School Approaches to Sustainability: An International Review of Sustainable School Programs.* Report Prepared by the Australian Research Institute in Education for Sustainability (ARIES) for The Department of the Environment and Heritage, Australian Government. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.231.7017&rep=rep1&type=pdf

Hernández-Salinas, A. (2018). *Les relations entre les sciences environnementales et les politiques dans le Programme MAB de l'UNESCO en Amérique Latine et son adaptation au Mexique, au Chili et en Haïti.* Doctoral Dissertation. Universite Sorbonne Nouvelle - Paris 3, París.

Higgings, P. (2002). Outdoor Education in Scotland. *Journal of Adventure Education and Outdoor Learning,* 2 (2): 149-168.

Higgings, P. & Nicol, R. (2018). Outdoor Learning. In: G. K. Bryce, W. M. Humes, D. Gillies, & A. Kennedy (Eds.), *Scottish Education.* Fith Edition. pp. 538-544.

Higgins, P., & Christie, B. (2018). Learning for Sustainabilidy. In: T. G. K. Bryce, W. M. Humes, D. Gillies, & A. Kennedy (Eds.). *Scotish Education.* Fifth Edition (pp. 554–564). Edinburgh University Press Ltd. Edinburgh, UK.

Higgins, P., & Kirk, G. (2006). Sustainability Education in Scotland: The Impact of National and International Initiatives on Teacher Education and Outdoor Education. *Journal of Geography in Higher Education*, 30 (2): 313-326. https://doi.org/10.1080/03098260600717414

Higgins, P., Loynes, C., & Crowther, N. (1997). *A guide for outdoor educators in Scotland.* Adventure Education, Reeds Ltd, Penrith, UK.

Hines, J. M., Hungerford, H. R. & Tomera, A. N. (1987). Analysis and synthesis of research on responsible environmental behavior: A meta-analysis. *Journal of Environmental Education,* 18: 1-8. https://doi.org/10.1080/00958964.1987.9943482

Hollweg, K. S., Taylor, J. R., Bybee, R. W., Marcinkowski, T. J., Mc Beth, W. C., & Zoido, P. (2011). *Developing a Framework for Assessing Environmental Literacy.* North American Association for Environmental Education. Washington, D.C., USA. http://www.naaee.net

Huggett, S. (2017). *Sustainability science continues to grow, per updated analysis*. Elsevier. Amsterdam, Netherlands. https://www.elsevier.com/connect/sustainability-science-continues-to-grow-per-updated-analysis

Ibáñez, J. (2015). Cómo se realiza una investigación mediante grupos de discusión. In: García Ferrando, M., Alvira Martín, F.R., Alonso Benito, L.E., Escobar Mercado, M. (Eds.). *El Análisis de La Realidad Social. Métodos y Técnicas de Investigación.* pp. 418–434.

Inguruglea. (2015). Map of the Basque Autonomous Community, schools taking part in School Agenda 21 and municipalities with schools certified as a "Sustainable School". Departamento de Educación Universidades e Investigación y Departamento de Ordenación del Territorio, Vivienda y Medio Ambiente. Gobierno Vasco. Vitoria/Gasteiz, Spain. http://www.euskadi.eus/contenidos/informacion/a21e/es_def/adjuntos/MUN.pdf

Ingurugela. (2018). *Memoria anual Actividades Ingurugela*. Departamento de Educación Universidades e Investigación y Departamento de Ordenación del Territorio, Vivienda y Medio Ambiente. Gobierno Vasco. Vitoria/Gasteiz, Spain. https://www.euskadi.eus/documentacion/2018/memoria-ingurugela/web01-a2inguru/es/

Ingurugela. (2019). *The Basque Experience of Education for Sustainability: School Agenda21*. Departamento de Educación Universidades e Investigación y Departamento de Ordenación del Territorio, Vivienda y Medio Ambiente. Gobierno Vasco. Vitoria/Gasteiz, Spain. https://www.euskadi.eus/web01-a2inghez/en/contenidos/informacion/a21e/en_def/index.shtml

IUCN. (1970). Final report: International Working Meeting on Environmental Education in the School Curriculum. IUCN. Nevada, USA. https://portals.iucn.org/library/sites/library/files/documents/Rep-1970-001.pdf

Jackson, L., Pang, M. F. (2017). Secondary school students' view of climate change in Hong Kong. *International Research in Geographical and Environmental Education,* 26 (3): 180–192. https://doi.org/10.1080/10382046.2017.1330036

Janhonen-Abruquah, H., Topp, J., & Posti-Ahokas, H. (2018). Educating professionals for sustainable futures. *Sustainability*, 10(3): 592.

Jicking, B., & Wals, A. (2008). Globalization and environmental education: Looking beyond sustainable development. *Journal of Curriculum Studies,* 40 (1): 1-21.

Kapalan, R., & Kapalan, S. (2002). Adolescents and the natural environment: A time out. In: Kahn, P. H. & Kellert, S. R. (Eds). *Children and Nature. Psychological, Sociocultural, and Evolutionary Investigations*. MIT Press. Cambridge, Massachusetts, USA (pp. 227-257).

Kidman, G. (2018). School geography: what interests students, what interests teacher? *International Research in Geographical and Environmental Education,* 27, 4.

Kioupi, V., & Voulvoulis, N. (2019). Education for Sustainable Development: A Systemic Framework for Connecting the SDGs to Educational Outcomes. *Sustainability*, 11(21), 6104. https://doi.org/10.3390/su11216104

Kollmuss, A., Agyeman, J. (2010). Mind the Gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental Education Research,* 8 (3): 239-260.

Krippendorff, K. (1990). *Metodología de análisis de contenido. Teoría y Práctica.* Paisós Ibérica. Barcelona, Spain.

Kubiszewski, I., Costanza, R., Anderson, S., Sutton, P. (2017) The future value of ecosystem services: Global scenarios and national implications. *Ecosystem Services,* 26: 289-301.

Kvale, S. (1996). InterViews. An introduction to qualitative research interviewing. Sage Publishing. NY, USA.

Læssøe, J., Feinstein, N. W., & Blum, N. (2013). Environmental education policy research – challenges and ways research might cope with them. *Environmental Education Research*, *19*(2), 231–242. https://doi.org/10.1080/13504622.2013.778230

Landrigan, P., Fuller, R., Acosta, N., Adeyi, O., Arnold, R., Basu, N., Boufford, J. (2018). The Lancet Commission on pollution and health. *The Lancet*, 391: 462-512.

Latouche, S. (2009). *La apuesta por el decrecimiento*. ICARIA. Barcelona, Spain.

Lauder, H., Brown, P., & Halsey, A. H. (2009). Sociology of education: a critical history and prospects for the future. *Oxford Review of Education*, 35(5): 569-585. https://doi.org/10.1080/03054980903216309

Lavery, A., & Smyth, J. (2003). Developing environmental education, a review of a Scottish project: international and political influence. *Environmental Education Research,* 9: 361–383.

Lazlo, K. C. (2012). From systems thinking to systems being: The embodiment of evolutionary leadership. *Journal of Organizational Transformation & Social Change*, 95-108.

Leal, A. Z. (2016). Fracaso escolar y relación con el saber. Elementos de comprensión de las teorías sociológicas de base / School failure and relation with knowledge. Elements of comprehension of the sociological theories. *Praxis Educativa*, 20 (2): 13-24. https://doi.org/10.19137/praxiseducativa-2016-200202

– Sharachchandra, M. L. (1991). Sustainable Development: A Critical Review. *World Development,* 19 (6): 607-621.

Lindlof, T. R., & Taylor, B. C. (2002). *Qualitative communication research methods*. 2nd ed. Sage Publications. London, UK.

Liu, J., Dietz, T., Carpenter, S. R., Alberti, M., Folke, C., Moran, E., Pell, A. N., Deadman, P., Kratz, T., & Lubchenco, J. (2007). Complexity of coupled human and natural systems. *Science*, 317 (5844): 1513-1516.

Llopis, J. A., & Ballester, M. R. (2001). *Valores y actitudes en la educación. Teorías y estrategias educativas. Values and attitudes in education. Theories and educational strategies.* Tirant lo Blanch. Valencia, Spain.

McGregor, C., Scandrett, E., Christie, B., & Crowther, J. (2019). Climate justice education. From social movement learning to schooling. In: Jafry, T. (Eds). *Routledge Handbook of Climate Justice*. Routledge, Taylor & Francis. London, UK.

Mckeown, R., & Hopkins, C. (2003). EE ≠ ESD: Defusing the worry. *Environmental Education Research*, 9 (1): 117-128.

McNaughton, M. J. (2007). Sustainable development education in Schottish schools: the sleeping beauty syndrome. *Environmental Education Research*, 13: 621-638.

Mcphie, J., & Clarke, D. A. G. (2018). Nature matters: diffracting a keystone concept of environmental education research – just for kicks. *Environmental Education Research*, 0 (0): 1-18. https://doi.org/10.1080/13504622.2018.1531387

Meadows, D. H., Meadows, D.L., Randers, J. & Behrens W.W. III. (1972). *The Limits to Growth*. Universe Books. New York, USA.

Melgar-Melgar, R., E. & Hall, C.A.S. (2020). Why Ecological Economics Need to Return to its Roots: The Biophysical Foundation of Socio-Economic Systems. *Ecological Economics,* 169. DOI:106567169:106567.

Milenium Ecosystems Assessment (2005). *Ecosystems and Human Well-Being, a framework for assessment.* Island Press. Washington DC, USA.

Molek-Kozakowska, K., & Geisler, R. (2020). De-bureaucratising organisational culture at a public university: A mixed-method study of the implementation of a liberal arts programme. *Higher Education Quarterly*. https://doi.org/10.1111/hequ.12262

Monroe, M. (2012). The Co-Evolution of ESD and EE. *Journal of Education for Sustainable Development,* 6 (1): 43–47.

Monroe, M. C. (2010). Challenges for environmental education evaluation. *Evaluation and Program Planning*, *33* (2): 194–196.

Mrazek, R. (1993). *Alternative paradigms in environmental education research*. North American Association for Environmental Education. Troy, Ohio, USA.

Naciones Unidas SD (2015). *De los ODM a los ODS. Naciones Unidas.* https://www.sdgfund.org/es/de-los-odm-los-ods

Nazir, J., & Pedretti, E. (2016). Educators' perceptions of bringing students to environmental consciousness through engaging outdoor experiences. *Environmental Education Research*, 22 (2): 288-304. https://doi.org/10.1080/13504622.2014.996208

Neal, P. & Palmer, J. A. (2003). *The handbook of environmental education*. Routledge, Taylor & Francis. London, UK.

Ochoa, G.A. (1993). La pedagogía activa. Procesos del conocimiento e implicaciones en las tareas del aula. *Pedagogía y Saberes*, 4: 33–42. https://revistas.pedagogica.edu.co/index.php/PYS/article/view/6185

Ojala, M. (2012). Hope and climate change: the importance of hope for environmental engagement among young people. *Environmental Education Research*, 18: 625-642. https://doi.org/10.1080/13504622.2011.637157

Onaindia, M. (2018). Transformar el mundo: la agenda de Naciones Unidas para el desarrollo sostenible. In: Sodupe, K. & Molina, G. (Eds.) *Gobernanza Para Un Sistema Energético Sostenible*. Universidad del País Vasco. Leioa, Bizkaia, Spain. pp. 363-380.

Oral source 1: School Agenda 21 Coordinator, school E. Personal communication, 2018.

Oral source 10: Natural Science teacher, school D. Personal communication, 2018.

Oral source 11: Physical Education teacher, school A. Personal communication, 2018.

Oral source 12: School Agenda 21 Coordinator, school B. Personal communication, 2018.

Oral source 13: Natural Science teacher, school A. Personal communication, 2018.

Oral source 14: Literature teacher, school D. Personal communication, 2018.

Oral source 15: Physical Education teacher, school B. Personal communication, 2018.

Oral source 16: Chemistry teacher, school B. Personal communication, 2018.

Oral source 2: Technology teacher, school B. Personal communication, 2018.

Oral source 3: Philosophy teacher, school C. Personal communication, 2018.

Oral source 4: Englih teacher, school B. Personal communication, 2018.

Oral source 5: Mathematics teacher, school C. Personal communication, 2018.

Oral source 6: Basque Language teacher, school C. Personal communication, 2018.

Oral source 7: School Director, school E. Personal communication, 2018.

Oral source 8: Director of studies, school B. Personal communication, 2018.

Oral source 9: English teacher, school D. Personal communication, 2018.

Oxfam. (2015). La desigualdad extrema de las emisiones de carbono. UK.

Ozga, J. (2008). Governing Knowledge: research steering and research quality. *European Educational Research Journal*, *7* (3): 261–272.

Palmer, J.A. (2002). *Environmental education in the 21st century: Theory, practice, progress and promise.* Routledge, Taylor & Francis. London, UK.

Parra Ortiz, J. M. (2003). *La educación en valores y su práctica en el aula.* UAM Ediciones. Madrid, Spain.

Pauw, J. B., Gericke, N., Olsoon, D., & Berglud, T. (2015). The Effectiveness of Education for Sustainable Development. *Sustainability*, 7: 15693-15717. https://doi.org/10.3390/su71115693

Perello-Marín, M., Ribes-Giner, G., Pantoja Díaz, O. (2018). Enhancing education for sustainable development in environmental university programmes: a co-creation approach. *Sustainability,* 10, 158. https://doi.org/10.3390/su10010158

Pericault, Y., Kärrman, E., Viklander, M., & Hedström, A. (2018). Expansion of Sewer, Water and District Heating Networks in Cold Climate Regions: An Integrated Sustainability Assessment. *Sustainability*, 10 (10): 3743. https://doi.org/10.3390/su10103743

Peterson, A. (2016). Getting 'What Works' working: building blocks for the integration of experimental and improvement science. *International Journal of Research & Method in Education*, *39* (3): 299-313. https://doi.org/10.1080/1743727X.2016.1170114

Pizmony-Levy, O. (2011). Bridging the Global and Local in Understanding Curricula Scripts: The Case of Environmental Education. *Comparative Education Review, 55* (4): 600-633. https://doi.org/10.1086/661632

Porrit, J. (2007). *Capitalism As If The World Matters*. Earthscan, London, UK:

Randers, J. (2012). 2052: *A Global Forecast for the Next Forty Years*. Jorgen Randers. Chelsea Green Publishing, Vermont, USA.

Ribeiro-Duthie, A.C. (2020). SDG 8 Decent Work and Economic Growth. Pp. 117–133 In: Franco, I.B., Chatterji, T., Derbyshire, E., Tracey, J. (Eds.). *Actioning the Global Goals for Local Impact*. Springer. Berlin, Germany. DOI: 10.1007/978-981-32-9927-6_9

Rickinson, M., Hall, M., & Reid, A. (2016). Sustainable schools programmes: what influence on schools and how do we know? *Environmental Education Research*, *22* (3), 360-389. https://doi.org/10.1080/13504622.2015.1077505

Ritzer, G. (1993). *Classical Sociological Theory*. MacGraw-Hill. NY, USA.

Robinson, J. (2004). Squaring the Circle? Some Thoughts on the Idea of Sustainable Development. *Ecological Economics*, 48 (4): 369-84.

Robottom, I., & Stevenson, R. B. (2013). Analyses of Environmental Education Discourses and Policies. In: R. B. Stevenson, M. Brody, J. Dillon, & A. E. J. Wals (Eds). *International Handbook of Research on Environmental Education* (pp. 123–125). Routledge. Edinburgh. UK.

Rockström, J., Steffen, W., Noone, K., Persson, A., Chapin, F., Lambin, E., Lenton, T., Scheffer, M., Folke, C., Schellnhuber, H., Nykvist, B., de Wit, C., Hughes, T., van der Leeuw, S., Rodhe, H., Sörlin, S., Snyder, P., Costanza, R., Svedin, U., Falkenmark, M., Karlberg, L., Corell, R., Fabry, V., Hansen, J., Walker, B., Liverman, D., Richardson, K., Crutzen, P. & Foley,J.. (2009). Planetary Boundaries: Exploring the Safe Operating Space for Humanity. *Ecology and Society*, 14 (2), 32.

Saylan, C., & Blumstein, D. T. (2011). *The Failure of the Environmental Education - And how we can fix it.* University of California Press. California, USA.

Schein, E. H. (1983). *Organizational culture and leadership* (Fourth edition 2010, Vol. 2). John Wiley & Sons. Hoboken, New Jersey, USA.

Schein, E. H. (1990). Organizational culture. *American Psychologist, 45*(2): 109–119. https://doi.org/10.1037/0003-066X.45.2.109

Schein, E. H. (2009). *The corporate culture survival guide*. John Wiley & Sons. Hoboken, New Jersey, USA.

Schoenfeld, C. (1971). *Outlines of Environmental Education*. Dembar Educational Research Service. Madison, Wisconsin, USA.

Schwartz, S., & Bislky, W. (1987). Toward a universal psychological structure of human values. *Journal of Personality and Social Psychology*, 53 (3): 550-562.

Scottish Government. (2014). Learning for Sustainability: The Scottish Government's response to the Report of the One Planet Schools Working Group. http://www.gov.scot/resource/0041/00416172.docx

Serpa, S. (2018). A Reflection on Sociology of Education. *International Journal of Social Science Studies*, 6 (3): 33-39.

Seyfang, G. (2003). Environmental Mega-Conferences—from Stockholm to Johannesburg and Beyond. *Global Environmental Change,* 13 (3): 223-28.

Shaxson, L., & Boaz, A. (2020). Understanding policymakers' perspectives on evidence use as a mechanism for improving research-policy relationships. *Environmental Education Research*, 1-7. https://doi.org/10.1080/13504622.2020.1764505

Shiva, V. (2000). *Stolen Harvest: The Hijacking of the Global Food Supply*. South End Press. Boston, USA.

Sinek, S. (2015). The golden circle. Gumroad Com Httptinyurl Comgolden-Circ.-Sinek

Sinek, S. (2009). Start with why: How great leaders inspire everyone to take action: Portfolio.

Smith, C. E., & Beckmann, J. (2018). *The Role of Organisational Culture in Education District Offices*. https://www.academia.edu/38120954/The_Role_of_Organisational_Culture_in_Education_District_Offices

Šorytė, D. & Pakalniškienė, V. (2019). Why it is important to protect the environment: reasons given by children. *International Research in Geographical and Environmental Education,* 28, 3.

Stapp, W. B. (1969). The concept of Environmental Education. *Journal of Environmental Education* 1 (1): 30-31.

Steffen, W., Grinevald, J., Crutzen, P., & McNeill, J. (2011). The Anthropocene: conceptual and historical perspectives. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, 369 (1938): 842-867. https://doi.org/10.1098/rsta.2010.0327

Sterling, S. (2004). An analysis of the development of sustainability education internationally: evolution, interpretation, and transformative potential. In: Blewitt, J. & Culling-Ford, C. (Eds). *Sustainable Development: A Challenge for Higher Education* (p. 18). Earthscan. London, UK.

Sterling, S. (2004b). Higher Education, Sustainability, and the Role of Systemic Learning. In: Corcoran P.B., Wals A.E.J. (Eds). *Higher Education and the Challenge of Sustainability*. Springer, Dordrecht. https://doi.org/10.1007/0-306-48515-X_5

Sterling, S. (2010). Learning for resilience, or the resilient learner? Towards a necessary reconciliation in a paradigm of sustainable education. *Environmental Education Research*, 16 (5–6): 511-528. https://doi.org/10.1080/13504622.2010.505427

Stern, M. J., Powell, R. B., & Hill, D. (2014). Environmental education program evaluation in the new millennium: what do we measure and what have we learned? *Environmental Education Research*, 20 (5): 581-611.

Stern, N. (2006). *Stern Review on the Economics of Climate Change*. HM Treasure. London, UK. Available : www.sternreview.org.uk.

Stern, N.H. (2007). *The economics of climate change: the Stern review*. Cambridge University press. UK.

Steverson, R.B. (2007). Schooling and environmental education: contradictions in purpose and practice. *Environmental Education Research*, 13 (2): 139-153

Stoof, A., Martens, R.L. & Van Merrienboer, J.J.G. (2002). The Boundary Approach of Competence: A Constructivist Aid for Understanding and Using the Concept of Competence. *Human Resource Development Review,* 1 (3): 345-365.

Taylor, S. J., & Bogdan, R. (1984). *Introducción a los métodos cualitativos.* Paidós Ibérica, Barcelona, Spain.

Thomas, R. E., Teel, T., Bruyere, B., & Laurence, S. (2019). Metrics and outcomes of conservation education: a quarter century of lessons learned. *Environmental Education Research*, 25 (2): 172-192.

Thompson, S. C. G., & Barton, M. A. (1994). Ecocentric and anthropocentric attitudes toward the environment. *Journal of Environmental Psychology*, 14 (2): 149-157.

Thomson, G., Hoffman, J., & Staniforth, S. (2003). *Measuring the success of environmental education programs.* Ottawa: Canadian Parks and Wilderness Society and Sierra Club of Canada. Canada.

Tilbury, D. (1995). Environmental education for sustainability: defining the new focus of environmental education in the 1990s. *Environmental Education Research,* 1 (2): 195-212.

Turner, B. L., Kasperson, R. E., Matson, P. A., McCarthy, J. J., Corell, R. W., Christensen, L., Eckley, N., Kasperson, J. X., Luers, A., & Martello, M. L. (2003). A framework for vulnerability analysis in sustainability science. *Proceedings of the National Academy of Sciences*, 100 (14): 8074-8079.

UNESCO Chair. (2019). *Objetivo 17+1: Garantizar La Diversidad Lingüistica y Cultural.* UNESCO Chair on World Language Heritage UPV/EHU. Leioa, Bizkaia, Spain.
https://www.ehu.eus/documents/3120344/3356414/18+helb+argumentuak_gaz.pdf/56b65d4b-6387-0c61-5f6c-44ee02d3b616

UNESCO (2014). *Roadmap for Implementing the Global Action Programme on Education for Sustainable Development*. UNESCO. Paris, France.
https://unesdoc.unesco.org/ark:/48223/pf0000230514

UNESCO. (1978). *Intergovernmental conference on Environmental Education* (Tibilis USSR, 14-26 October 1977). UNESCO. Paris, France (p. 24).
https://unesdoc.unesco.org/ark:/48223/pf0000032763

UNESCO. (2013). *Education for Sustainable Development (ESD).* UNESCO. Paris, France.
https://unesdoc.unesco.org/ark:/48223/pf0000222120?posInSet=2&queryId=22756577-8d55-4019-95f2-ce9debb9eea6

UNESCO. (2015). *Incheon Declaration: Education 2030: Towards inclusive and equitable quality education and lifelong learning for all*. UNESCO. Paris, France.
https://unesdoc.unesco.org/ark:/48223/pf0000233813

United Nations. (1992). *The Rio Declaration on Environment and Development.* 19. United Nations, Rio de Janeiro, Brazil.
https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_CONF.151_26_Vol.I_Declaration.pdf19.

United Nations. (2015). *The Millennium Development Goals Report 2015*. United Nations. NY, USA. https://www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015%20 rev%20(July%201).pdf

Usategui, E. & del Valle, A. I. (2007). *La Escuela sola. Voces del profesorado*. Fundación Fernando Buesa Blanco Fundazioa. Vitoria/Gasteiz, Spain.

Vallance, S., Perkins, H. C. & Dixon, J. E. (2011). What Is Social Sustainability? A Clarification of Concepts. *Geoforum*, 42 (3): 342-348.

Valles, M. S. (2007). Entrevistas cualitativas. *Cuadernos Metodológicos*. Centro de Investigación Sociológicas. Madrid, Spain. http://investigacionsocial.sociales.uba.ar/wp-content/uploads/sites/103/2010/09/4-VALLES-ENTREVISTAS-CUALITATIVAS.pdf

Venkatesan, M. & Luongo, G. (2019). *SDG8-Sustainable Economic Growth and Decent Work for All*. Emerald Group Publishing. UK.

Walker, K. (1997). Challenging Critical Theory in Environmental Education. *Environmental Education Research*, *3* (2): 155–162. https://doi.org/10.1080/1350462970030204

Waters, C. N., Zalasiewicz, J., Summerhayes, C., Barnosky, A. D., Poirier, C., Gałuszka, A., Cearreta, A., Edgeworth, M., Ellis, E. C., Ellis, M., Jeandel, C., Leinfelder, R., McNeill, J. R., Richter, D. deB., Steffen, W., Syvitski, J., Vidas, D., Wagreich, M., Williams, M., … Wolfe, A. P. (2016). The Anthropocene is functionally and stratigraphically distinct from the Holocene. *Science*, 351 (6269), 2622. https://doi.org/10.1126/science.aad2622

Wattchow, B. & Brown, M. (2011). *A pedagogy of place: Outdoor education for a changing world*. Monash University Publishing.

Weiss, C. H. (1995). Nothing as Practical as Good Theory: Exploring Theory-based Evaluation for Comprehensive Community Initiatives for Children and Families. In: Connell, J. (Eds). *New Approaches to Evaluating Community Initiatives: Concepts, Methods, and Contexts*. Aspen Institute for Humanistic Studies. New York, USA.

Wengraf, T. (2001). *Qualitative Research Interviewing. Biographoc, narrative and semistructured methods*. Sage Publishing. NY, USA.

Zalasiewicz, J., Williams, M., Haywood, A., & Ellis, M. (2011). The Anthropocene: a new epoch of geological time? *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, 369 (1938): 835-841. https://doi.org/10.1098/rsta.2010.0339

Zeegers, Y. & Clark, I. (2014). Students' perceptions of education for sustainable development. *International Journal of Sustainability in Higher Education,* 15, 2

Zoller, U. (2012). Science Education for Global Sustainability: What Is Necessary for Teaching, Learning, and Assessment Strategies? *Journal of Chemical Education*, 89: 297-300.

II.   ATALA: ONDORIOAK

II.   SECTION: CONCLUSIONS

9. ONDORIOAK

Ikerketa honek nazioarteko eztabaidan ekarpen berria egiten du, hezkuntzak iraunkortasunerako eta garapen iraunkorrerako helburuak lortzeko duen garrantziaz, Euskal Autonomia Erkidegoaren kasuaren azterketaren bidez.

"Ingurumen hezkuntza" kontzeptutik "iraunkortasunerako hezkuntzara" igarotzeko azterketa kontzeptuala burutu dugu. Horrez gain, EAEko Hezkuntza sistemaren arloko funtsezko eragileen esperientziak eta pertzepzioak lehen eskuko iturrien bidez jaso ditugu. Hemen erabilitako ikuspegi teorikoak eta enpirikoak tokiko testuinguru desberdinetan aplika daitezke eta horrela konparazioak eginez iraunkortasunerako Hezkuntzaren gaiari buruz, ikuspegi orokorrak sortaraziko ditugu.

Iraunkortasunerako ikuspegian sakontzen

1- Hezkuntzan iraunkortasuna hobeto kontzeptualizatzeko, eredu bat sortu dugu praktikan aplika daitezkeen zenbait kontzeptu garrantzitsu grafikoki adierazteko ere beharrizana dagoelako. Aipatu dugun *Baloreetan oinarritutako hezkuntzatik* abiatuz ikuspegi integratzailea duen eredua sortu dugu, hezkuntza arautuaren prozesuan, iraunkortasuna hobeto kontzeptualizatzen lagunduko duena.

Esparru horretan, *Iraunkortasunerako Hezkuntza* (*Education for Sustainability*) kontzeptua hezkuntza eraldatzailearen eredua adierazteko ere erabili beharko litzateke. *Iraunkortasuna trebakuntza (Learning for Sustainability)* kontzeptua ere erreferentzia da. Hala ere, ikerketa honen kontestuan *Iraunkortasunerako Hezkuntza* eraginkorragoa da; testuinguruak zehazten du kontzeptu egokiena zein den, kontzeptu bat edo bestearen ezagutza eta erabilpenaren arabera.

Iraunkortasunerako hezkuntza derrigorrezko bigarren hezkuntzan: erronka eta aukerak irakasleen, ikasleen eta administrazioaren ikuspegitik

2- Derrigorrezko bigarren hezkuntzako eragileekin izandako elkarrizketa eta lan etnografiaren bidez, hezkuntza eragileen ikuspegiak kontuan hartuta, iraunkortasunerako hezkuntzaren arrakastaren funtsezko faktoreak ondoko hauek dira: irakasleen inplikazio pertsonala, proiektuaren koordinatzailearen lidergoa eta hezkuntza

zentroko zuzendaritzaren babesa. Gainera, irakasleria egonkor batek taldeko nortasun sentimendua eragin dezake, iraunkortasunerako hezkuntza proiektuarekiko modu positiboan eraginez.

3- Irakasleek nabarmentzen dutenez gero, iraunkortasunaren dimentsio guztiei aurre egin behar zaie, Baina, Eskolako irakaskuntza gaiak egituratzeko moduagatik, edukiak integratzeko arazoak sortzen dira. Beraz, eskola-agintarien laguntza ezinbestekoa da hezkuntza zentroen irakaskuntza egitura eta funtzionamendua, iraunkortasunerako hezkuntza, diziplina askotara egokitzeko unean. Garapen Iraunkorrerako Helburuak 2030 (irakasleei eta ikasleei neurri handi batean ezezagunak) diziplina anitzeko jokabidea hezkuntzan abiatzeko eta sakontzeko gida eta erraminta egokia izan liteke.

4- Esperientziaren bidezko jarduera praktikoak, iraunkortasunaren aldeko ikuspegi baikorrarekin loturik dira, irakasleek zein ikasleek premiazko dituzte iraunkortasunaren programen arrakastarako. Jarreretan eta ohituretan eragin zuzena izateko, iraunkortasunerako hezkuntzak esperientziaren bidezko ekintzak eta eraldaketak sor ditzaketen metodologiak erabili behar dira.

5.- Bigarren hezkuntzan iraunkortasunerako hezkuntza lantzeko ikasleen adina (12-16 urte) erronka izan daiteke, bestelako interes batzuk dituztelako; eta aldi berean, gaia lantzeko aukera, hausnarketak garatzeko gai direlako.

6.- Ikasleek ingurumen arazoei buruzko ezagutzak dituzte; hala ere, eguneroko portaera ez dator bat iraunkortasunarekin. Beren ikuspegitik, iraunkortasunerako hezkuntzak presentzia handiagoa izan beharko luke eskola ordutegian, unean uneko ekintzez gain, azken hauek ere jarraipen eta eragin mugatua baino ez dutelako.

7- Ikasleek uste dute benetako aldaketa bat izateko, kontzientzia aldaketa handiagoa izan behar dela hezkuntza zentroen kudeaketaren testuinguruan, ikastetxeetako zuzendarien inplikazioarekin. Ikuspegi hau irakasleen pertzepzioekin bat dator, eta zentzu horretan, eskola osoko esperientziak iraunkortasunerako hezkuntza praktikak ezartzeko gida izan daitezke. Irakaslegoarentzat, 'denbora falta' da oztopo nagusienetako bat; beraz, asignatura formaletan integratzea (4. Ondorioa), eta presentzia

gehiago ematea (5. Ondorioa) dira aukeretako bi, arazoari aurre egiteko eta jarduera arrakastatsua izateko.

8- Ebaluazio sistemari dagokionez, ebaluazio ikerketak hezkuntza programak babesteko eta hobetzeko potentzial handia du. Euskal Autonomia Erkidegoan egindako ebaluazio kuestionarioetan, Ingurugela programaren bidez, identifikatutako indarguneak hauek dira: iraunkortasunaren ikuspegi integrala eta inplikatutako eragile guztien konpromisoa. Ebaluazioaren ahulgunea da, ikasleen jarrera, jokabideen edo pertzepzioa aldaketa neurtzearen presentzia urria. Hori dela eta, jarrera eta portaerarekin erlazionatutako ebaluazio elementuak indartuz, iraunkortasunaren bidean beharrezkoak diren hezkuntza ekintzak indartuko lirateke.

 9.-Ikasleen presentzia handiagoa ebaluazio prozesuan gomendagarria agertu da, ikasleen ikuspuntutik *feedback*a lortzeari buruz hausnartzeko. Gainera, hezkuntza ebaluazio prozesua hobetuko da hezkuntza zentroko koordinatzailea ebaluazio galdetegiari erantzuteko erantzukizuna ez balu hartuko. Kanpoko ebaluatzaileen laguntzarekin burutu beharko litzateke ebaluazio prozedura.

10- Iraunkortasunerako hezkuntzaren bidean sakontzeko ezinbestekoa da tokian tokiko testuingurua kontuan harttzea, kontextu bakoitzera egokitu behar dira iraunkortasunerako ekintzak.

Ikuspegi pertsonalak etorkizuneko ikerketerako.

11.- Nazio Batuen 2030 Agendaren Garapen Iraunkorrerako Helburuek, erronka berria planteatu dute iraunkortasunerako hezkuntzan sakontzeko. Etorkizuneko ikerketetarako, interesgarria izango litzateke iraunkortasunarekin erlazionatutako eta uztartutako *balioetan oinarritutako hezkuntza* kontzeptuan ihardutea eta sakontzea, kontuan hartu beharreko balioak hobeto ulertzeko eta definitzeko, iraunkortasuna eta iraunkortasunerako hezkuntza testuinguru bakoitzean errotzeko, tokiko esanahiaren eta kulturaren kontzeptuen eta erabileraren arabera.

12.- Azken 4 urteko ikerketa esperientzian oinarrituz, iraunkortasunerako hezkuntza ikerketak erronka ugari ditu. Eragile inplikatuen partaidetza lortzea ez da erraza, ohiko

irakaskuntza zereginen ondorioz denbora mugatu eta sarritan gehiegizkoa dutenez gero, landa behaketa eta datu enpirikoen lortzea zailtzen duelako.

Hausnarketa pertsonaletako bat zera da: Unibertsitateen eta Hezkuntza Administrazioen artean lankidetza harremanak indartu eta erakundetu behar direla, *Ingurugela* barne. Hori dela eta, beharrezkoa da indarrak batzea norabide berean jarraitzeko, erronkei aurre egiteko. Doktorego ikerketa honek erakundeen eta ikertzaileen arteko harremana izateko atea ireki du, ikerketaren urteetan garatutako lankidetza jarraitzeko bidea erraztu dezakeena. Etorkizuneko ikerketei begira, hainbat lerro ireki dizkigu ikerketa honek.

10. CONCLUSIONS

This research aspires to make a new contribution to the international discussion on the importance of education for sustainability in achieving the goals of sustainability and sustainable development, through the case study of the Basque Autonomous Community in five secondary schools. We have explored the conceptual analysis in order to move from the concept of environmental education to education for sustainability. Moreover, experiences and perceptions of key stakeholders in the field have been instrumental as first-hand sources. The theoretical and empirical approaches used here are a model applicable to different local contexts which enables us to make comparisons in order to contribute to get a global overview of the issue.

Sustainability approach

1- To better conceptualize sustainability in education we have created a model taking into account the need to graphically express some important concepts in the literature that can be applied in practice. We propose a model with an integrative approach inspired by the *Education Based on Values* concept, and integrating other concepts. This concept helps us understand what should be part of 'sustainability', as well as the purpose of Agenda 2030. In this framework, the term *Education for Sustainability* should be used as a proper term to express a model of transformative education. The concept of *Learning for Sustainability* is also a reference, but *Education for Sustainability* is more effective in the context of this study because it creates more efficient and comprehensive communication through students and teachers.

Education for sustainability in secondary education; challenges and opportunities from the perspective of teachers, students and administration

2- Taking into account the perspectives of educational actors and practitioners, one of the key factors for the success of the program on education for sustainability is the involvement of the teaching staff, as well as a clear leadership of the coordinator of the project. In this sense, a stable teaching team enhances a sense of group-identity with the educational project.

3- Teachers highlight that there is a need to address all the dimensions of sustainability integrating different areas of knowledge through sharing activities in common designs. However, this is difficult in schools, mainly due to the compartmentalized structure of the departments. Therefore, the support of school authorities is essential to adapt the structure and functioning of educational centers to the multidisciplinarity needed for *Education for Sustainability*. Sustainable Development Goals/Agenda 2030 (largely unknown to the teaching staff and students) could provide a good framework for multidisciplinary education.

4- Experiential approaches with a positive vision on the sustainability issue are considered by both teachers and students as factors contributing to the success of the programs. In order to generate a real impact on attitudes and habits, *Education for Sustainability* should have experiential exercises and actions such as outdoor activities and methodologies that allow for a hopeful vision of the future and give rise to transformation.

5. In order to work on environmental and sustainability education, the age of secondary students (12-16 years all), can be both a challenge and an opportunity: a challenge because it is an age in which their priorities and conversation topics are others rather than environmental or social problems. An opportunity because they already have the ability and training for a critical thinking.

6- Students have knowledge about the socio environmental problems, however, their behaviour does not correspond to their way of thinking. From their perspective, *Education for Sustainability* issues should have more presence than they currently do in the school schedule of secondary education, becoming not only punctual actions that usually don't have a proper follow-up.

7- Students consider that, for a real change, there must be a greater transformation in consciousness in the management context of educational centers, with the implication of school managers. This vision is in line with teacher's perceptions, and in this sense, practices developed in other schools (for instance Melbourne/Australia), such as the model known as *whole-school,* are a guidance for implementing educational practices

towards sustainability.

8- In relation to the assessment system, the evaluation research has a high potential to support and improve educational programs. Some of the identified strengths in the evaluation through the *Ingurugela* program in the Basque Country are its comprehensive vision, and the engagement of all implied stakeholders. A weakness of the evaluation system is the low presence of measurement of the impact on student's attitudes or behaviors. Therefore, reinforcing evaluation items in relation to attitude and behavior, would strengthen the necessary educational actions on the road towards sustainability.

9- A greater presence of students in the process of evaluation is recommended in order to reflect on the possibility of obtaining feedback from the students' perspective. Moreover, the education assessment process will be enhanced if the coordinator was not directly responsible for answering the evaluation questionnaire, but rather supported by external evaluators.

10- The inclusion of data in relation to the socio-economic conditions and culture of the analyzed educational centre would reinforce the necessary educational actions on the road towards sustainability. It is necessary to find a way of working based on each social context, with the global culture picture in mind.

Personal insights for future research

11- The UN Agenda 2030 is a new challenge to guide education, and in this framework, the *Education Based on Values* as a concept to support a sustainable future, leads to discussion and reflection from the academic sphere to the educational one. For future research, it would be interesting to continue analyzing this concept related to sustainability, to better understand the values under consideration and how they might be applied according to different contexts and cultures.

A thought of our doctoral research experience during the last four years is that research on *Education for Sustainability* has many challenges, such as a lack of time and excess of work for involved stakeholders, that complicates the logistics and fieldwork necessary to gather empirical data. One of the main personal conclusions is that it is

necessary to strengthen the partnership and collaboration between Universities and Educational Administrations through the creation of communication channels, in this case including *Ingurugela.* Therefore, it is necessary to join forces in the foundation of a partnership to row in the same direction to address the challenges ahead. This doctoral research opens a door for interaction between institutions and researchers, taking into account the relationship developed over the years of the research, which can facilitate a way for continuing collaboration.

III. ATALA: Artikuloen bilketa

11.   SECTION: Compilation of articles

Article title:

Education for agenda 2030: what direction do we want to take going forward?

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Education for Agenda 2030: What Direction do We Want to Take Going Forward?

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Abstract: In the field of education, the concept of environment and sustainable education, and the use of some terms in this field, have developed since their beginning. The United Nations Agenda 2030 of the Sustainable Development Goals (SDGs) gives some clues about and opportunities to reflect upon which concepts and directions to take in the field of education towards promoting sustainability. This paper addresses the issue of the currently fragmented concepts in relation to environmental and sustainability education, and proposes a more comprehensive vision to better advance the path towards education and sustainability. This paper: (1) addresses the main historical milestones in the construction of the concept of environmental education and education for sustainable development;

(2) analyzes the issue of which direction we should take within the framework of education in the era of the SDG Agenda 2030, taking emerging concepts such as learning for sustainability and sustainable education as references; and (3) proposes a holistic approach, described as education based on values. We conclude that a new integrative approach inspired by the education based on values concept, and integrating other concepts, will help to better conceptualize sustainability in education, as explained in the proposed model.

1. Introduction

In the field of education, the use of terms such as "environmental" or "sustainability" has evolved since their beginning. The concepts are changing, as are the practices and learning processes, as well as society and its individual and collective agents. Some argue that the concept determines what has been learned in practice; others consider action, rather than concepts, to be more important. For many (Mckeown and Hopkins 2003; Tilbury 1995) "the emergence of the discourse of education for sustainable development (ESD) over the past 15 or so years is viewed as a progressive transition in the field, along similar lines to the positive portrayal of prior historical transitions from nature study to conservation education, to environmental education" (Steverson 2007).

The United Nations Agenda 2030 proposes a new integrative path towards sustainability, where Sustainable Development Goals (SDGs) visualize a future of inclusive equity, justice, and prosperity and take into account social, environmental, and economic wealth. The Agenda 2030 emphasizes education, that is, it acknowledges education as a means to achieve all of the SDGs. In this context, the Incheon Declaration (UNESCO 2015) was approved at the World Education Forum in 2015, emphasizing the significant role of education as a main driver to fulfill the SDGs. However, the complexity of sustainability as a concept makes it difficult to relate the SDGs to educational outcomes and to education for sustainable development (ESD) (Kioupi and Voulvoulis 2019). Sustainability, as an educational task, has not been accurately defined, and often considered too vague and abstract (Kioupi and Voulvoulis 2019). Thus, ESD has been interpreted in different ways around the world and often differs according to context and culture (UNESCO 2013).

In the field of academia, with international summits, education is deemed necessary in light of environmental problems. Therefore, Schoenfeld (1971) concisely emphasized that "it is a cadre of scientific leaders that sets the environmental agenda in this country [USA]". In other places, scientists like Carson (1962), Ehrlich (1968), Goldsmith et al. (Goldsmith and Allen 1972), and Hardin (1968), who placed education on the environmental agenda, supported that idea as well (Palmer and Neal 2003b). Environmental and sustainability education is still currently a topic of theoretical and practical discussion, showing different perspectives and inconsistencies (Goldsmith and Allen 1972; Gonzalez-Gaudiano 2006; Mckeown and Hopkins 2003).

Divergences of perspectives can be particularly noticeable among those that defend the position that the purpose of environmental education (EE) should be specifically to talk about nature, and those that support the idea that the concept of sustainability should be incorporated in education, going beyond nature and incorporating a holistic point of view, incorporating also social dimensions. Others have stated that education for sustainable development (ESD) is shifting in the same manner as the goals of the EE (Monroe 2012), or that the change in terminology goes beyond this (Jicking and Wals 2008). It is necessary to create a common vision of the field of education and of the direction of sustainability, guided by SDGs in order to help educators to define the required skills and methodologies to be taught. Given that the environmental crisis is, in part, a global issue, should educational approaches be much broader? Alternatively, do we need to define sustainability and make it concrete, with a local view, in order for it to succeed? Is it maybe just a matter of thinking about ethical values globally? Or does it matter what we call it? What direction do we want to take going forward within the field of education for a sustainable future? As mentioned by Monroe (2012), it may be time to borrow from the success of overlapping and intertwined concepts and work on the type of education that meets the current needs of citizens and communities; "we need quality education that prepares people to understand multiple views; to listen and communicate with others; to vision and evaluate options; to collect, synthesise and understand data; to learn how others have balanced contentious elements of an issue; and to be able to adopt actions" (Monroe 2012).

The aim of this paper is to analyze conceptual discussion of environmental and sustainability education and propose an approach within an educational framework by which to integrate concepts and visions under the umbrella of SDGs, guided by a previous review of emerging concepts such as learning for sustainability and sustainable education. The research question is therefore: what direction should the notion of an integrated sustainable future take within an educational framework? The hypotheses that guides this paper is: "The need to conceptualize sustainability into Education in an integrated way, can be gathered by existing concepts such as sustainable education and learning for sustainability, leading us to a deeper conception of an education based on values".

2. Materials and Methods

In order to meet the main objectives of this work, the methodology was structured around di*ff*erent steps. Firstly, we identify the need to examine the creation and evolution of the environmental education and education for sustainable development concepts, in order to establish a background to the development of our approach. We consider the works of McKeown and Hopkins (2003) and Sterling (2004) as references in this subject. In addition, chronological international milestones in the context of the United Nations guide us from the 1960s to the Earth summit in the 1990s.

Secondly, to answer the research question regarding which direction we should take in the field of education within the framework of the international Agenda 2030, learning for sustainability (Higgins and Christie 2018) and sustainable education (Sterling 2004a, 2004b, 2010) approaches are taken as references. These were considered after conducting a bibliographic search in the largest academic database, the Web of Science, in the period 2000–2019. This search was undertaken using the keywords "environmental education", "education for sustainable development", "education for sustainability", "learning for sustainability", and "sustainable education". The last two concepts yielded the smallest number of publications; however, they are emerging concepts for the era of the 2030 Agenda, due to their comprehensive vision, and for this reason, were taken as references. In order to test the hypothesis, a content analysis of the main publications regarding these concepts was carried out. Moreover, other concepts derived from these will also be taken into consideration in the analysis and study.

3. Background: The Paradigm of Environmental and Sustainable Development Education

In the academic and research field, the Journal of Environmental Education was the first specialized journal on the topic. In an article from 1969, Stapp et al. (Stapp 1969) proposed the following definition for the term "environmental education":

> "Environmental education is aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated

problems, aware of how to help solve these problems, and motivated to work toward their solution" (p. 34).

This definition from Stapp served as a precursor for those that were subsequently proposed, such as that of the International Unit for Conservation of Nature (IUCN) (IUCN 1970). Stapp argued that this approach to education was *diff*erent from the one o*ff*ered by the conservation approach, because the latter was aimed at natural resources and not so much at the community's environment and its associated problems. The latter idea was emphasized by the sentence "the role of the citizen in working, both individual and collectively, toward the solution of problems that a*ff*ect our wellbeing" (Stapp 1969) (p. 34). Likewise, this definition does not only refer to knowledge, but also to the change in mentality that would result in action. Therefore, it is not surprising that environmental education is mostly introduced in natural science subjects, since the terminology used, such as "biophysical" or even "environment", is usually only related to this field. Nonetheless, already back then, this definition was close to what is promoted today, from knowledge to action; motivation and involvement of citizenship.

Annette Gough (Gough 2013), in her reflection on the history of terminology and research in Environmental Education, points out that we must take into account that they are definitions made from a Western and masculine perspective. In the definitions adopted at the Belgrade Conference, "man" or "he" were used, but in 1975 when reconstructing them, some concepts were edited. For example, "man-made" was rewritten as "built". The latter might be related to the fact that the guidelines were drafted during the International Year of Women, and that the United Nations advocated non-sexist writing, which has been taking e*ff*ect. However, "man" was still used in the documents at the Tbilisi conference (UNESCO 1978). It is vital to take into account those considerations in order to capture a full spectrum of the history and evolution of the proposed concept. Moreover, the debate on the paradigm of environmental education is identified with Mrazek's "Alternative Paradigms in Environmental Education Research" (Mrazek 1993). This book is a key reference in the field, although it has also been criticized by some scholars, such as Louise Chawla (Chawla 1994). Chawla underlines the incorrect use of the term "paradigm" and the lack of presence of the media or other sources that could also be valuable to conduct environmental education research.

A turning point in the evolution of the concept is the Brundtland Report (1987) (Brundtland 1987) and the Earth Summit in Rio (1992) (United Nations 1992). Through the admission and use of the expression "Sustainable Development", a new paradigm was accentuated in relation to education, that is, a changing terminology was generated when education for sustainable development (ESD) began to be introduced. Despite its multitude of interpretations, the defenders of the concepts of education for sustainable development and education for sustainability alleged that the concept of sustainability implies a more holistic and comprehensive ideology in the way of approaching the subject, i.e., covering the three dimensions of sustainability that would include the environment, society, and the economy. Sterling (Sterling 2004a) argued that from his perspective, EE is part of ESD, which can be understood as one of the three pillars to work on. On the other hand, McKeown and Hopkins (2003) argued that, from their point of view, while EE and ESD have similarities, they also pointed out their di*ff*erences in order to emphasize the importance of each discipline individually: "EE and ESD are di*ff*erent, but complementary. It is important that the EE and the ESD maintain separate agendas, priorities, and programmatic development. The two conceptualizations will influence each other, and each will benefit from the independent growth of the other" (Mckeown and Hopkins 2003). Looking at and analyzing international documents, the approaches of both Belgrade and Tbilisi were less directed at people (i.e., human rights, democracy, or standard of living) and focused more on the di*ffi*cult context of the environment. Furthermore, the critical situation of the population was addressed in the 1980s and 1990s with the preparation of the Earth Summit, the Agenda 21 Program, and a series of relevant United Nations conferences (Mckeown and Hopkins 2003).

In the decade of the 1990s, after the Earth Summit in Rio (1992) and using the definition of sustainable development of Brundtland, the concept of education for sustainable development (ESD) began to be incorporated. UNESCO, as an international organization that aims to set a trend at the international level, began to use the term ESD, which is also currently included in the context of the 2030 agenda with the Sustainable Development Goals (United Nations 2015). Thus, in international policy statements, the most used variant is that of "sustainable development" and therefore ESD, defined by UNESCO (UNESCO 2014a). It is clear that this concept, sustainable development, wants to encompass a holistic ideology, integrating

sustainability as a term. However, the debate is generated by the term "development"; that is, what does "development" or "sustainable development" mean and what does it involve? At the academic level, one of the main economic issues that has created discussion is the concept of sustainable development. This concept is conditioned by the paradigm of the orthodox economy that equates economic growth with increased welfare and full employment, which determines the need for and goodness of sustained growth (Bermejo et al. 2010). However, that model of economic growth which has been maintained so far is precisely the one that has led us to the current environmental and social crisis. It is this economic model that undermines the ecosystem of which we are a part, as well as our future, which is why the concept itself is considered to be an oxymoron (Bermejo et al. 2010): planetary boundaries exist, and that development based on consumption and that identifies growth thinking of natural resources as something unlimited, contradict each other. Thus, despite the terminological contradiction, is it really a more complete concept compared to "environmental education"? Education and sustainability are both complex concepts with a complex relationship, so we use the literature and emerging concepts to guide this study and answer the defined research questions.

4. Results

4.1 A holistic approach based in Learning for Sustainability

Education plays an important role in reaching the objectives of Agenda 2030 and the SDGs (Giangrande et al. 2019). Specifically Goal 4 (Education of Quality) and target 4.7 promote "education for sustainability".   The aim of this target is expressed as "ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship". In this context, emerging concept of Learning for sustainability (LfS) are considered appropriate for analysis. It is a concept developed in Scotland by Higgins and Christie (2018) to define the reflections of Lavery and Smyth (2003) and McNaughton (2007) that gave rise to the philosophy and pragmatic development of LfS:

"LfS o*ff*ers a holistic pedagogical approach that seeks to build the values, skills, and knowledge necessary to develop practices within schools, communities, and, at governance levels within teacher education, accord with the collective aim of taking action for a sustainable future" (Higgins and Christie 2018) (p. 554).

In 2012, the United Nations recognized a Regional Center of Experts on Education for Sustainable Development (Scotland Center) at the University, in Scotland, and it is in that context that LfS was decided as the name for the Center. From that moment onwards, the Scottish Government began to take a special interest in and response to sustainability and sustainable development, aligning the political agenda in that direction. This signaled the intention of the Scottish Government to encourage schools to gradually reduce the use of natural resources and develop an orientation towards values that address sustainability through a comprehensive approach to the school. The report of the ministerial advisory group, entitled "Learning for Sustainability" (Scottish Government 2014), established a LfS model that integrated three equally important facets: Sustainable Development, Global Citizenship, and Outdoor Learning. The overall objective was to develop "a whole school approach that enables the school and its milder community to build the values, attitudes, knowledge, skills, and confidence needed to develop practices and take decisions which are compatible with a sustainable and more equitable future" (Higgins and Christie 2018) (p. 557).

After defining what the concept implied, the authors maintained that the challenges of introducing LfS were especially challenging when addressing interdisciplinary political content and the dimension of values and actions. Based on that approach, both outdoor education and education for global citizenship constitute two fundamental pillars of LfS.

4.1.1 Outdoor Education

Outdoor education is an educational practice that was developed without necessarily having its own definition. Within the profession it is now recognized as the intersection of three main areas: outdoor activities, environmental education, and social and personal development (Higgins, Loynes, and Crowther 1997), as shown schematically in Figure 1.
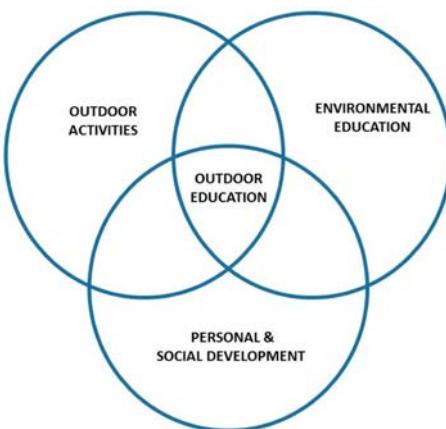
Figure 1. Diagram showing the range and scope of
outdoor education (Higgins et al. 1997).

In the 1960s, Scotland became one of the first places in the world where outdoor education was accepted in a formal way (Higgings 2002). As the interest in outdoor learning grew, it became an increasingly nuanced concept. A subtler understanding emerged in practice and in formal education policy. Thus, we have the example of Scotland, as evidenced by its "Curriculum for excellence through outdoor learning" (Scottish Government 2014), which serves as a guide and useful starting point to understand what experiential outdoor pedagogy implies. It also provides the basis of interdisciplinary learning that includes the natural environment, as Beames et al. (Beames, Higgins, and Nicol 2012) claim; they explain and show in detail and in depth the approaches of outdoor education in their theory and practice. They emphasize that in terms of location, it is convenient to consider a model of concentric circles where the school is located in the center and where learning opportunities are available in the immediate vicinity of the school grounds through day trips and residential, several-day-long expeditions (Beames et al. 2012). This idea also complements the "place-based education" (Grueneward 2003) that immerses students in local places that are familiar to them, which, as Wattchow and Brown (Wattchow and Brown 2011) maintain, offers unique opportunities for interdisciplinary studies.

4.1.2   Global Citizenship Education

Global citizenship education promotes the idea that schools should educate for citizenship, being one of the oldest political and pedagogical proposals in the western world. According to Britton (Britton 2018), in ancient Greece, both Plato and Aristotle defended citizenship education as a means to build a society with well-informed and well-articulated citizens. In both Greece and Rome, the nature of 'citizenship' was, of course, quite di*ff*erent from the modern ideal of universal emancipation. However, these first attempts to frame the relationship between the state, citizenship, and education served as a model for the modern era. At the definition of environmental education by Stapp (1969), we can already see the mention to citizenry.

The concept of global citizenship education also generated diverse debates in reference to its definition, as indicated by Argibay et al. (2009). In this paper we consider that education for global citizenship should be defined as an education that promotes critical citizenship with the ability to reflect on challenges, such as inequalities, human rights, peace, and sustainability, both locally and globally, and to be contributors, with a proactive attitude, of a more peaceful, tolerant, safe, and sustainable world. The approach that learning for sustainability o*ff*ers to us is considered so complete that we have taken it as a reference. However, we find it interesting to consider other emerging concepts, such as climate justice education (CJE). The term "climate justice" began to gain strength in the late 1990s after a wide range of activities of the social and environmental justice movements emerged in response to fossil fuel industry operations and, subsequently, to what its members saw as the failed global climate governance model that was seen at COP15 (The United Nations Conferences on Climate Change are annual conferences that are held within the framework of the United Nations Framework Convention on Climate Change (UNFCCC). They serve as the formal meeting of the Conference of the Parties (COP) to assess progress in the treatment of climate change, starting in the mid-1990s, to negotiate the Kyoto Protocol, to establish legally binding obligations for developed countries, to reduce their greenhouse gas emissions) in Copenhagen.

4.2   Climate Justice Education

Climate justice demands social and environmental justice, which is why it is a term used to frame climate change as a social and political problem beyond only an environmental or physical problem in nature, analyzing problems such as equality, human rights, and

collective rights and responsibilities. One of the major problems that is claimed by the climate justice movement is that the people least responsible for climate change are those who su*ff*er the worst consequences (Gore 2015). Taking this into account, in the field of climate justice education, the challenges and opportunities for climate justice education are analytically framed as issues of "cognitive justice" and "translation" (McGregor et al. 2019). While the former is concerned with moving from the "monoculture" of Eurocentric epistemology to an "ecology" of knowledge production practices, the latter addresses how this could be achieved. Therefore, this term recognizes the fundamental role that social movements have played in the generation of public learning about climate change for more than three decades (Crowther, Hemmi, and Scandrett 2012). More specifically, the growing discourse of climate justice has challenged the dominant discourses of sustainable development and ecological modernization, which frame general education on climate change as a "post-political" global problem. Consequently, climate justice pushes educational interventions to take into account the geographical and generational distribution of burdens and benefits, the threats to cultural integrity, and the form and scope of citizen participation in climate policies (McGregor et al. 2019). It is also a concept in vogue today, taking into account the current "Fridays for Future" movement started by the 16-year-old Swedish activist Greta Thunberg. The initiative denounces climate change and its consequences for young people, and puts these inequalities in the center of the discourse.

4.3 Educaion Based on Values

Under the umbrella of the SDGs, the direction in which we want to go is to be able to build societies based on the five pillars of the Agenda 2030: People, Planet, Prosperity, Peace and Partnership. One answer may be developing an Education based in values. In literature written in English, it is a term that is not developed. In a search for the concept "Education base on Values" in the most extensive academic database, Web of Science, we find just tree publication under this term. However, there are references in Spanish, so that we can base on that existing literature. Education based on Values covers a wider space than the previous ones, although it can also be understood as similar to a holistic and global sustainability concept, which is ultimately based on Values (What is understood by values can have di*ff*erent approaches. Among them, Llopis and Ballester (Llopis and Ballester 2001; Parra Ortiz 2003) (p. 62), o*ff*er us a vision of the relationship between values and their historicity that allows us to

reconcile objectivist theory, historicist theory, and subjectivist theory. For these authors, history can be constituted, and in fact, it constitutes a field of establishment and illumination of values. It is in history where they are created, and they appear by the activity of persons where they are clarified and incarnated. In this way, the absolute character of truth and value and its historical condition becomes compatible and understandable, since they are discovered and embodied in history. Every historical moment, and possibly every person, immersed in a way of relating in a participative and creative way with reality can discover those values.) This concept seeks to educate about certain values that entail building a society based on respect, justice, and equality. Based on those values, we understand that it is easier to understand and work towards a sustainable society both environmentally and socially.

As Usategui and Del Valle (2007) indicate, "the reflection on values is historically linked to scenarios of transformation and social uncertainty, what we generally describe as moments of crisis" (p. 19), as in the current moment of socio-environmental crisis, where we generate reflections on what is transmitted through education. This reflection is where we position ourselves when we pose questions about values, and where sustainability issues, among others, are also reflected. "The transformations in the valuation dimension constitute one of the most outstanding features when it comes to understanding what is happening in our societies" (Usategui and del Valle 2007) (p. 19). Therefore, to educate towards a future based on sustainability, it is necessary to work and understand the values that are instilled, or the direction that should be taken for that common goal.

In this sense, Education based on Values can cover many areas of life. Among others, these include compulsory formal education, where this conceptualization should be taken as the basis on which subjects are defined and designed. Education based on values is "a fundamental instrument when it comes to achieving an egalitarian, inclusive, and critical education, that is, committed to the task of training subjects capable of fully developing their abilities throughout their lives and of becoming actively involved in the building a more humanized, fairer, and freer society" (Usategui and del Valle 2007) (p. 20). Educating based on values also means educating towards sustainability, and towards environmental and social respect and justice, with a critical mentality capable of reflecting on the reality about what is wanted for a sustainable society in terms of environmental and social matters. We could say that

Education based on Values includes the concepts described above, such as Environmental Education, Education for Sustainability, Climate Justice, and Education for Global Citizenship.

4.4 Sustaiable Education

Within the framework of environment and sustainability education (Britton 2018; Grueneward 2003; Hardin 1968), Sterling proposed a new term, namely sustainable education. He set out this objective after analyzing the challenges in the world of education and sustainability. In this regard, he stated that the lack of fundamental progress in the "reorientation" of education, and the adaptation and containment of education for sustainability by the mainstream underlined the need for the articulation of an alternative and ecologically grounded educational paradigm. That paradigm, he a*ffi*rmed, can inform a change of culture, a change that can cure the schism between realists and behaviorists, and idealists and constructivists, and provide a more integrative vision of education. Thus, he proposed sustainable education in order to address these challenges:

To help meet this challenge, I have suggested the concept of sustainable education, "not as yet another equal term to EfS and ESD, but as the next logical step in the evolution of the field. Suggesting a shift of educational culture, the emphasis here is not on desired outcomes, as in 'education for sustainable development', but on the qualities of education itself through which sustainability is manifest as an emergent property" (Sterling 2004b). Consequently, Sterling (Sterling 2004a) proposed a conceptual diagram that constitutes the basis for our own proposal. Concerning the horizontal dimension, and using a systemic nesting model, the conceptual diagram suggests that the key terms can be seen, from an evolutionary perspective, as forming a hierarchy, as shown in Figure 2.
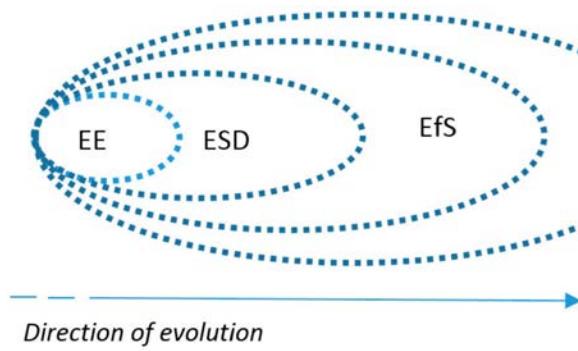
Figure 2. "The evolution of key terms" (dotted circles indicate the need for permeable limits and conceptions) (Sterling 2004a).

Through this diagram, the author a*ffi*rms that the evolutionary pattern (indicated by the arrow) represents increasing inclusivity, and that the emergence of new terms indicates a recognition of the limits of the previous terms while still respecting their validity. Therefore, as indicated in the previous section, environmental education (EE) has traditionally paid more attention to the quality of nature. education for sustainable development (ESD) is partly the result of the confluence of environmental education and development education concerns, which has attempted to encompass social and economic dimensions, and environmental change and alternative futures (Sterling 2004a). At this point, terms previously mentioned, such as "education for a sustainable future", would also be included. Finally, authors such as Sterling (Sterling 2004a) argue that sustainability indicates both the basis and the possibility of change in the educational paradigm as a whole, which is why they defend the term sustainable education (SE).

5 Discussion

Di*ff*erent paradigms respond to their respective historical contexts. Concepts evolve and change, as do the priorities and needs of each moment. Taking into account the current socio-environmental crisis, an in the era of de Agenda 2030, it is necessary to address the problem from a holistic view. Therefore, we choose and justify the learning for sustainability (LfS) focus. However, in the various local contexts of educational

practice, that is, in schools, the most used and familiar concept may not always be the one that is more holistic or ideal. Nonetheless, it is considered necessary to start moving from environmental education to education for sustainability in order to generate changes in mentalities and integrate the concept of sustainability (Agirreazkuenaga 2019), understanding it holistically and comprehensively for action without being exclusive of one over the other.

Conceptualization is important, since words contribute to the explanation of social realities, interactions with the environment, and the generation of new concepts in practice; "science deals directly with concepts and not with 'realities ', because the integrating units of scientific discourse are concepts and not directly with reality or phenomena. The concepts are, in turn, mental constructions, are constructs, abstractions extracted from objects and concrete real events"(Bautista Vallejo 2001).

In the framework of education, the use of sustainability concept, which has integral and holistic implications (unlike what is associated with the word 'environmental'), can generate changes through its use in the mentality of how to address the problem and the socio-environmental crisis. Currently, the term 'sustainability' may be often used without linking it to the social dimension, for example by only associating it with environmental sustainability. However, that does not mean that this knowledge cannot also be integrated, and by incorporating the word into the discourse, it can facilitate the transition to the changes in mentality that are sought.

In terms of education for sustainability and its teaching in a holistic and integral way, certain methodologies help to generate spaces where the subject of sustainability traverses and works through di*ff*erent fields of knowledge. For example, methodologies such as Outdoor Learning, experiential learning, teaching by projects, and active pedagogies are giving rise to a more integrative educational program. At the institutional level, the concept itself can have a lot of power, or it should have, but it cannot be placed at the same level of a government that is responsible for the conservation of a forest or for the integral and holistic (sustainable) management of a protected area. For example, the UNESCO Man and Biosphere Reserve (UNESCO MAB) program was created by the holistic need to manage spaces (the broken-thread argument). In this case, it was seen that the conservation of untouchable natural spaces does not always make sense if there are people living in that space. The ecosystem can

live with the human if it is done in a sustainable way. Therefore, conceptually the program evolved from dealing with conservation, then to sustainability, and then to sustainable management. A similar process can be seen in the transition from environmental education to education for sustainability.

However, using one concept over another does not mean that it has more or less value. In spite of our reasons for choosing a particular concept, in certain practical contexts (where, for example, one concept is better understood than another) we understand that it may be more useful to treat the terms as synonyms and equivalents in their intentions. Javier Benayas (Benayas and Marcén 2019) uses a metaphor that we consider to be very helpful to deal with the issue: "The important thing is not the color of the flag with which it is fought, but to stay together to fight a powerful enemy under a common cause" (Usategui and del Valle 2007). Thus, the important points are the actions that are generated and carried out, but without losing sight of the concepts and terms that we use, and what e*ff*ects they have on us, i.e., what they mean in our way of thinking and seeing the world. It is through these terms that we create one reality or another; we are continuously creating realities, and we live based on them and the beliefs embedded in them.

6   Conclusions

This analysis concludes with a proposal for further theoretical research regarding education and sustainability, where it is a debate on which concept should be used. Thereby, we conclude that a new integrative approach inspired by the Education based on Values concept, and integrating other concepts, will help to better conceptualize sustainability into Education, as explained in the proposed model (Figure 3). Thus, the idea of the hypothesis that guides this study is confirmed.
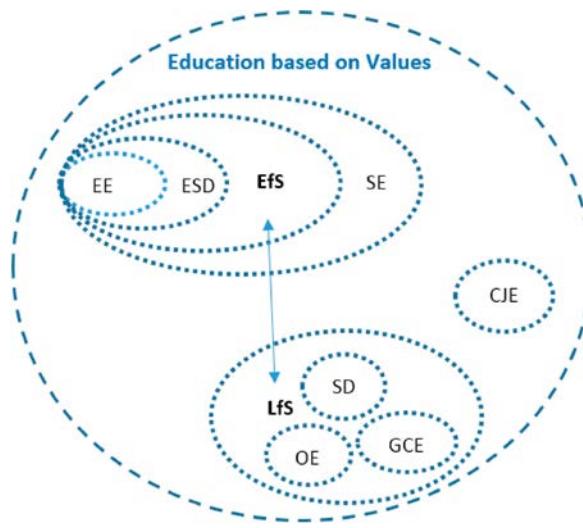
Figure 3. Diagram of concepts about education and sustainability. Our own elaboration based on Sterling's 2004 work.

The debate will consist of evaluating what values we want for our society; in this context, sustainability should be one of the key concepts, that taking as a reference the SDG umbrella, it has a lot of ethical∕moral values inside it. Likewise, the knowledge to be generated exists 'outside' but also 'inside' by means of the preconceptions of each person. Current society is complex and trans-disciplinary challenges require a new way of producing knowledge within applied frameworks. For instance, values such as respect—respect for mother nature, for persons no matter the place of birth or religion, solidarity, empathy with persons around the world—can help us to understand that the world is one, so that global citizenship can be developed based on that value. Sterling (Mcphie and Clarke 2018) proposes that by applying critical thinking skills (including normative and values analyses and systems thinking) the learner's worldview, values, and personal ways of knowing are challenged and changed accordingly. This authors promotes this deeper, transformative learning, in which a shift of consciousness can occur and permit greater awareness not only of what and how to change the world, but why (Giangrande et al. 2019).

Based on the results, we generate the following proposal (Figure 3) considering the need to be graphically represented some relevant and growing concepts from the literature that can be applied in practice. The concepts include the following:

- EE: Environmental Education

- ESD: Education for Sustainable Development

- EfS: Education for Sustainability

- SE: Sustainable Education

- LfS: Learning for Sustainability

- SD: Sustainable Development

- OE: Outdoor Education

- GCE: Global Citizenship Education

- CJE: Climate Justice Education

We share the ideas in Sterling's diagram and additionally integrate some of the above-explained concepts. First, we highlight some key points:

- practitioners and theorists are involved in a continuous process of reflexive (and often di*ffi*cult) learning through which the views of the adequacy or totality of educational orientations are modified over time;

- through this process, the previous conceptions in this area are not rejected but are subsumed within the later conceptions;

- the validity of previous conceptions is not questioned, but their claims of su*ffi*ciency are challenged.

In the proposal (Figure 3), the term learning for sustainability and what that implies is considered to be of great interest and to make important contributions, which enriches the conceptual review so far. LfS proposes to expand knowledge, promote a quality education, and achieve a paradigm shift through the concept of sustainable education. LfS refers to sustainability, without losing sight of its three pillars (environmental, social, and economic), and also encompasses concepts such as education for global citizenship (GCE) and outdoor education (OE). We want to pay special attention to outdoor education because of its potential and educational relevance, since it implies

experiential learning with a greater impact on the student learning process (Beames et al. 2012).

Outdoor education has its origins in the debates among the philosophers of Ancient Greece about the dominance of the body or the mind to control the actions of the individual. The debate has progressed over the centuries with contributions from philosophers and scholars from many countries. In modern educational terms, the problem is whether a modern, mainly intellectual, form of education is suitable for the proper development of the individual or if there are more appropriate forms of direct educational experience that foster awareness of oneself, of others, and of the environment. In therapeutic terms, the problem is whether educational and outdoor adventure experiences can address some of the personal and social difficulties we encounter in current modern societies (Higgins et al. 1997). One of the objectives that education can have in this field is to 'reconnect' students with nature. In that sense, we consider the reflection made by authors Mcphie and Clarke (2018); they point out that we cannot expect people to "reconnect" with nature since there is not an ideal state that corresponds to that, but we can expect people to consider nature as a material concept that can be experienced in the concept creation process. Likewise, education for climate justice (McGregor et al. 2019) includes nuances worth taking into account, such as addressing and harnessing the work of social movements and their role in education.

In this context, we understand that learning for sustainability (LfS) is in line with education for sustainability (EfS). Although the use of LfS is of interest, concept of EfS can be more popular in some cases. Therefore, the use of the term EfS will be more effective given its extensive familiarity depending on the context, generating a more efficient and comprehensive communication without losing sight of the contributions made by LfS. It is also worth noting the use of dotted circles in Figure 3, highlighting Sterling's key ideas mentioned above that invoke the need to understand these concepts as permeable to each other. In the proposed diagram (Figure 3), reference is made to encompassing concepts within the framework of education based on values. These concepts are based on values to be transmitted to guide the way towards environmentally and socially sustainable societies. This is the main key element of the paper, as it is a concept that helps us understand what should be under sustainability and under what the Agenda 2030 is looking for. The proposed approach to education based on values leads debate and reflection for the academic field towards education

and sustainable futures.

Finally, the limitation of this research is that is not a deep literature review, but an analysis of concepts chosen by the researcher by specific methodology. For future research, it would be interesting to continue analysing the concept of "education based on values" related to sustainability to better understand the values under consideration and how they might di*ff*er according to context, local meaning and use of the concepts.

References

Agirreazkuenaga, L. (2019). Embedding Sustainable Development Goals in Education. Teachers' Perspective about Education for Sustainability in the Basque Autonomous Community. *Sustainability*, *11*(5), 1496.

Argibay, M., Celorio, G., & Celorio, J. (2009). *Educación para la Ciudadanía Global. Debates y desafíos.* (Instituto Hegoa).

Bautista Vallejo, J. M. (2001). *Actitudes y valores: precisiones conceptuales para el trabajo didáctico. 3*, 189–196.

Beames, S., Higgins, P., & Nicol, R. (2012). *Learning outside the classroom: Theory and guidelines for practice*. Routledge.

Benayas, J., & Marcén, C. (2019). *Hacia una Educación para la Sostenibilidad. 20 años después del Libro Blanco de la Educación Ambiental en España* (CENEAM).

Bermejo, R., Arto, I., Hoyos, D., & Garmendia, E. (2010). *Menos es más: del desarrollo sostenible al decrecimiento sostenible* (52. Cuadernos de trabajo). Instituto Hegoa.

Britton, A. (2018). Citizenship Education. In T. G. K. Bryce, W. M. Humes, D. Gillies, & A. Kennedy, *Scottish Education. Fith Edition.* (pp. 533–537).

Brundtland, G. H. (1987). *Our Common Future. The World Commission on Environment and Development.* Oxford University Press.

Carson, R. (1962). *Silent Spring*.

Chawla, L. (1994). Review of Alternative Paradigms in Environmental Education Research [Review of *Review of Alternative Paradigms in Environmental Education Research*, by R. Mrazek]. *Children's Environments*, *11*(3), 256–260.

Crowther, J., Hemmi, A., & Scandrett, E. (2012). Learning environmental justice and adult education in a Scottish community campaign against fish farming. *Local Environment*, *17*(1), 115–130.

Ehrlich, P. R. (1968). *The population Bomb*. Ballantine Books.

Giangrande, N., White, R. M., East, M., Jackson, R., Clarke, T., Saloff Coste, M., & Penha-Lopes, G. (2019). *A Competency Framework to Assess and Activate Education for Sustainable Development: Addressing the UN Sustainable Development Goals 4.7 Challenge. 11*(10), 2832.

Goldsmith, E., & Allen, R. (1972). *A Blueprint for Survival*. Ecosystems Ltd.

Gonzalez-Gaudiano, E. (2006). *Environmental education: A field in tension or in transition? 12*, 298–300.

Gore, T. (2015). *Extreme Carbon Inequality: Why the Paris climate deal must put the poorest, lowest emitting and most vulnerable people first*.

Gough, A. (2013). The Emergence of Environmnetal Education Researc. A 'History' of the Field. In *International Handbook of Research on Environmental Education* (pp. 13–22). Routledge.

Grueneward, D. . (2003). *The best of both worlds: A critical pedagogy of place. 32*, 3–12.

Hardin, G. (1968). The Tragedy of the Commons. *American Association for the Advancement of Science.*

Higgings, P. (2002). *Outdoor Education in Scotland. 2 (2)*, 149–168.

Higgins, P., & Christie, B. (2018). Learning for Sustainabilidy. In T. G. K. Bryce, W. M. Humes, D. Gillies, & A. Kennedy (Eds.), *Scotish Education. Fifth Edition* (pp. 554–564). Edinburgh University Press Ltd.

Higgins, P., Loynes, C., & Crowther, N. (1997). A guide for outdoor educators in Scotland. *Adventure Education, Penrith.*

IUCN. (1970). *Final report: International Working Meeting on Environmental Education in the School Curriculum.*
https://portals.iucn.org/library/sites/library/files/documents/Rep-1970-001.pdf

Jicking, B., & Wals, A. . (2008). *Globalization and environmental education: Looking beyond sustainable development. 40(1)*, 1–21.

Kioupi, V., & Voulvoulis, N. (2019). Education for Sustainable Development: A Systemic Framework for Connecting the SDGs to Educational Outcomes. *Sustainability*, *11*(21), 6104. https://doi.org/10.3390/su11216104

Lavery, A., & Smyth, J. (2003). *Developing environmental education, a review of a Scottish project: international and political influence. 9*, 361–383.

Llopis, J. A., & Ballester, R. (2001). *Valores y actitudes en la educación. Teorias y estrategias educativas. - Values and attitudes in education. Theories and educational strategies.* Tirant lo Blanch.

McGregor, C., Scandrett, E., Christie, B., & Crowther, J. (2019). Climate justice education. In T. Jafry, *Routledge Handbook of Climate Justice*. Routledge.

Mckeown, R., & Hopkins, C. (2003). EE ≠ ESD: Defusing the worry. *Environmental Education Research*, *9*(1), 117–128.

McNaughton, M. J. (2007). *Sustainable development education in Schottish schools: the sleeping beauty syndrome. 13*, 621–635.

Mcphie, J., & Clarke, D. A. G. (2018). Nature matters: diffracting a keystone concept of environmental education research – just for kicks. *Environmental Education Research*, *0*(0), 1–18. https://doi.org/10.1080/13504622.2018.1531387

Monroe, M. (2012). *The Co-Evolution of ESD and EE. 6(1)*, 43–47.

Mrazek, R. (1993). *Alternative paradigms in environmental education research*. North American Association for Environmental Education.

Palmer, J. A., & Neal, P. (2003). *The handbook of environmental education*. Routledge.

Parra Ortiz, J. M. (2003). *La educación en valores y su práctica en el aula.*

Schoenfeld, C. (1971). *Outlines of Environmental Education.*

Scottish Government. (2014). *Learning for Sustainability: The Scottish Government's response to the Report of the One Planet Schools Working Group.*
http://www.gov.scot/resource/0041/00416172.docx

Stapp, W. B. (1969). *The concept of environmental education. 1 (1)*, 30–31.

Sterling, S. (2004a). An analysis of the development of sustainability education internationally: evolution, interpretation, and transformative potential. In *Blewitt, J. and Culling- ford, C. (eds), Sustainable Development: A Challenge for Higher Education* (p. 18). Earthscan.

Sterling, S. (2004b). *Higher Education, Sustainability, and the Role of Systemic Learning* (P. B. Corcoran & A. E. J. Wals (eds.)).

Sterling, S. (2010). Learning for resilience, or the resilient learner? Towards a necessary reconciliation in a paradigm of sustainable education. *Environmental Education Research*, *16*(5–6), 511–528. https://doi.org/10.1080/13504622.2010.505427

Steverson, R. B. (2007). *Schooling and environmental education: Contradictions is purpose and practice. 13(2)*, 139–153.

Tilbury, D. (1995). *Environmental education for sustainability: defining the new focus of environmental edcuation in the 1990s. 1 (2)*, 195–212.

UNESCO. (1978). *Intergovernmental conference on environmental education: Tibilis USSR, 14-26 October 1977* (p. 24).

UNESCO. (2013). *Education for sustainable development (ESD).* https://unesdoc.unesco.org/ark:/48223/pf0000222120?posInSet=2&queryId=227 56577-8d55-4019-95f2-ce9debb9eea6

UNESCO. (2014). *Hoja de ruta para la ejecución del Programa de acción mujndial Educación para el Desarrollo Sostenible* (p. 11).

UNESCO. (2015). *Incheon Declaration: Education 2030: Towards inclusive and equitable quality education and lifelong learning for all.* https://unesdoc.unesco.org/ark:/48223/pf0000233813

United Nations. (1992). *The Rio Declaration on Environment and Development*. 19.

United Nations. (2015). *The Millennium Development Goals Report 2015*. https://www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015% 20rev%20(July%201).pdf

Usategui, E., & del Valle, A. I. (2007). *La Escuela sola. Voces del profesorado.* (Fundación Fernando Buesa Blanco Fundazioa).

Wattchow, B., & Brown, M. (2011). *A pedagogy of place: Outdoor education for a changing world*. Monash University Publishing.

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Embedding Sustainable Development Goals in Education. Teachers' Perspective about Education for Sustainability in the Basque Autonomous Community

Leire Agirreazkuenaga

Abstract: In the current context of unsustainability that we inhabit, education is considered to be a necessary pillar for social transformation towards sustainable development. The main goal of this research is to analyze the implementation of educational practical experiences of the education for sustainability programs from the perspective of teachers working in secondary schools in the Basque Autonomous Community. The analyzed schools are situated in different socio-economic and environmental contexts. The analysis also aims to diagnose the extent of knowledge on the 2030 Global Agenda of Sustainable Development Goals (SDGs) with a view to its future implementation. The study is based on qualitative tools such as in-depth interviews (38 interviews conducted at five secondary schools). For analytical purposes, the perspective of the teaching staff is adopted as they play an indispensable and determining role in education for sustainability. The main results showed that the involvement of the teaching staff, personal motivation and good leadership are essential for the success of the program, together with the support of school authorities. A stable teaching staff and a sense of identity with the project are decisive factors. In this sense, differences were detected between public schools and private schools that, to a certain extent, condition the difficulties faced by the teaching staff. Experiential activities, activities outside the classroom and a positive perspective on the subject are considered factors contributing to the success of the programs. SDGs were still largely unknown to the teaching staff but could provide a good framework for multidisciplinary education.

Keywords: education for sustainability; ESD; teachers; learning for sustainability; sociology of education for a sustainable future; Agenda 2030; Sustainable Development Goals; School Agenda 21

1. Introduction

Since the middle of the 20th century, human impact on the planet has been expediting a process known as 'the great acceleration' (Waters et al. 2016), in which the impact of the human species has multiplied. This process entails an alteration in the cycles of materials, the accelerated rate of the extinction of species and the appearance of new contaminating materials, which in turn have a great effect on the welfare of people (Steffen et al. 2011a). In this respect, the International Geosphere-Biosphere Programme (IGBP) has proposed a definition for a new geological age characterized by the human impact on the planet equaling or surpassing the forces of nature: The Anthropocene (Zalasiewicz et al. 2011).

The capitalist model of economic growth and its mode of living are proving to be unsustainable because the planet has limits. The current model of consumption requires an expenditure of natural resources and energy that the planet will be unable to sustain for much longer. The planet is now in a state of economic deficit, since the ecological footprint is greater than its bio-capacity. The world deficit per capita is 2.6 hectares per person (Global Fotprint Network 2018).

Facing this situation of consumption that exceeds planetary limits, new technological alternatives are starting to emerge, such as renewable energies (Pericault et al. 2018). Nonetheless, in spite of these advances, it continues to be absolutely necessary to change the model of production and consumption (Bauer, Arnold, and Kremer 2018). This involves a change of habits, and therefore a change of mentality, which entails cultural and social changes. To achieve these changes, it is indispensable to develop environmental awareness in civil society, the business sector, the public decision-making powers and citizens in general.

To confront the global challenges we face, education has a decisive role to play in directing societies towards changes that will result in a sustainable future. This context framing considers education to be a key tool in response to the global socio-environmental problems of the planet, and the potential of Sociology of Education (SE) for advancing research in this field is underscored (Lauder, Brown, and Halsey 2009). Specifically, the role of the teaching staff is of decisive importance, since they are responsible for educating future generations (Chinedu, Wan-Mohamed, and Ogbonnia 2018). Some authors highlighted the key role of the teacher as the leader in education for sustainable development (Turner et al. 2003). Moreover, in higher education, the

involvement of teachers is considered a key factor in reaching sustainable innovation (Liu et al. 2007).

The United Nations' 2030 Agenda defines 17 Sustainable Development Goals (SDGs), providing a tool for reaching an integral understanding of what sustainability entails. This research is based on the idea that sustainability and sustainable development involve economic, social and environmental dimensions, with the understanding that the social and ecological dimensions are linked, and that the social and economic dimensions depend on the environmental system (Chinedu et al. 2018; Turner et al. 2003). That is, the welfare of the planet and the biosphere is a priority for social and economic welfare (Figure 1).

Figure 1. A view of the Sustainable Development Goals (SDGs) showing that healthy ecosystems are a prerequisite for human welfare and economic development (Liu et al. 2007).

Having identified the need for understanding and studying education for sustainability, we shared that concern with key actors in the area of education for sustainability in the Basque Country, and defined the object to be studied. It is also worth underscoring that the definition and idea of this study arose from a four-month stay involving a collaboration with Ingurugela, the public institution for Education for Sustainability in the Basque Autonomous Community (BAC) (extended explanation Section 2.1).

The general goal of this research is to analyze the key factors with respect to methodologies and the attitudes of secondary school teachers towards education for sustainability. Taking concrete cases of secondary schools in the BAC, the implementation of education for sustainability projects is analyzed from the perspective

of the teachers. The case studies are located in different socio-economic and environmental contexts. The analysis also attempts to evaluate and offer a diagnosis of the degree of knowledge about Global 2030 Agenda and its future implementation. Therefore, the specific aim of the research is to identify keys to successfully implementing and imparting knowledge about education for sustainability and SDGs, which is then reflected in a change of attitude.

The SE, a specialization of sociology as science (Serpa 2018), can contribute to the sociological understanding of educational phenomena (Flecha 2011; Leal 2016). The teaching staff, as a professional group, is one of the objects studied by SE (Serpa 2018). The contribution of this research is inserted in the field of SE, by means of direct, first-hand knowledge of a topic that is of transcendental importance to the survival of the planet. This empirically-based research aims to explain an aspect of the educational process that affects the teaching staff and its ongoing training (Guerrero 2007).

The present paper begins by providing a short, conceptual description of education for sustainability (in the case of this research, the terms environmental education and education for sustainability are used interchangeably (Sterling 2004a), followed by an explanation of the context of the analysis and the methodological strategy employed, and then the main results are set out and the text ends with the discussion and conclusions.

2. Materials and Methods

2.1. Research Background and Context

On an international level, the pioneering congress at which environmental education started to be discussed was held in Tibilis in 1977. The topic was subsequently addressed at the Rio Summit in 1992, where Agenda 21 was defined on the request of civil society, administrations, governments and international representatives. The goal of this Agenda 21 is to involve society in carrying out actions aimed at achieving sustainability at the local level, with the aim of contributing to global sustainability of the planet. From this emerged the now well-known statement, 'Think globally, act locally'. School Agenda 21 was defined as complementary work for carrying out actions towards sustainability in local schools.

Within the framework of this international context, education for sustainability was promoted in the BAC, and in 1990 the Centers of Education and Research in Environmental Didactics (CEIDA—Centros de Educación e Investigación Didáctico Ambiental) were created, nowadays known as Ingurugela. The goal of Ingurugela is to support the teaching staff and encourage education for sustainability in non-university education centers. The BAC has a territory with 2.17 million people (Anon 2019), which is a density of 300 inhabitants per km2. In spite of it being a highly urbanized territory, its culture is characterized as being closely linked to the natural setting, an aspect that offers great potential for a transition towards sustainability.

School Agenda 21 began to be implemented in 2003 and became the backbone of education for sustainability in the schools of the BAC, with the support of advisers from Ingurugela. There are also other initiatives in this sense that emerged from civil society, non-governmental organizations, ecologist groups and others. This research takes the public institution Ingurugela as a referent of education for sustainability in the BAC, although it identifies several other organizations where work is done on this topic. Currently, an attempt is being made to move from School Agenda 21 to Agenda 2030, taking the latter's integral and holistic vision as an axis. This process is aligned with the recent Strategic Plan for Education for the Sustainability of the Basque Country (Gobierno Vasco 2016). On the one hand, this strategy is in line with the Environmental Strategy of the Basque Government 2020, based on the 2015–2030 international agenda of the Sustainable Development Goals, and on the other, it aligns with the specific Global Action Plan of UNESCO on Education for Sustainable Development.

Ingurugela is a network of advisory and teacher training service on Education for Sustainability, for the non-university education system. They were created in 1990 by the Department of Environment and the Education Department of the Basque Government, following the identification of the need for public administration to provide and develop counselling with respect to education for sustainability. School Agenda 21 (henceforth SA21) is an educational program for sustainable development.

It forms part of the 'Research and Experimentation' line of work of the Ingurugela educational centers. The annual work of the Ingurugela educational centers is defined on the basis of the Basque Government's Environmental Education Program (Order of 22 June 1998 of the Official bulletin of the Basque Autonomous Community –BOPV- of 1 October 1998).

The program's organization in the schools is as follows (Figure 2):

- The coordinator is responsible for setting the process underway and leading it.

- The support team is formed of people from the teaching staff and school authorities who help in the day-to-day work of organizing the project.

- The Environmental Committee is a participatory space for the whole educational community. The people interested are represented and decide on the main lines of the program (planning, plan of action, evaluation, etc.).

- The county-level coordination meetings are a space for cooperation amongst the educational centers. The coordinators of these centers meet periodically with environmental specialist from the municipality and the adviser from Ingurugela.
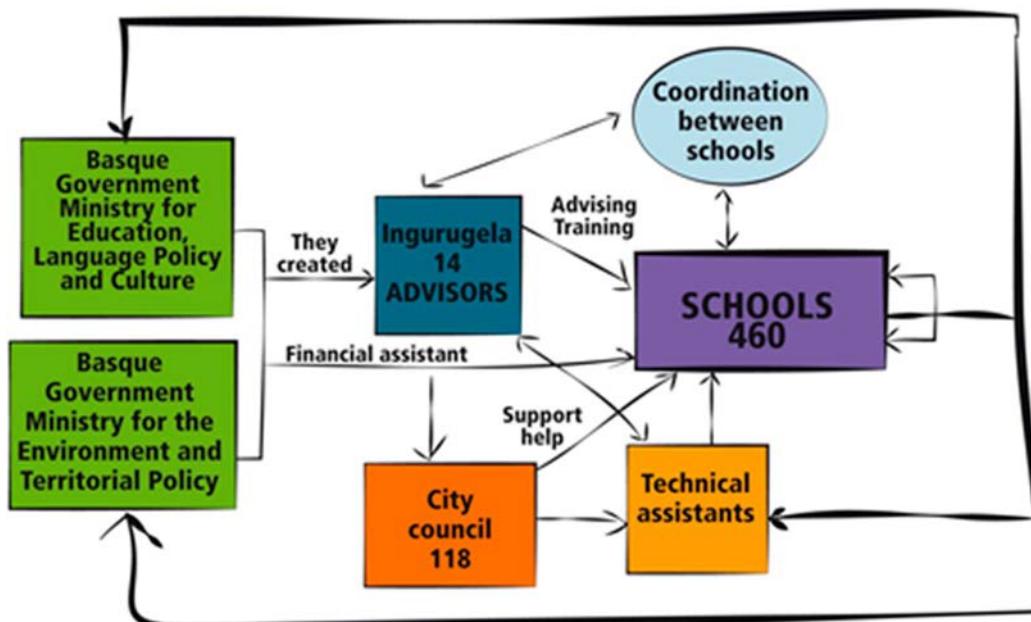

Figure 2. The organizational scheme of the School Agenda 21 program
(Ingurugela 2019b).

In turn, the aim of certification and recognition as a 'Sustainable School' is to give a distinction to outstanding experiences in the SA21 program. This means recognizing the work and the quality of the school with respect to education, participation and sustainability (Figure 3, sustainable schools are marked with a red star).

In order to take part in this examination, the schools must have spent a minimum of 5 years in the SA21 program. Recognition lasts for 4 school years. A total of 460 schools took part in the SA21 program in the 2017/2018 school year, with approximately 60% of the schools belonging to the BAC as well as 118 municipal councils participating.
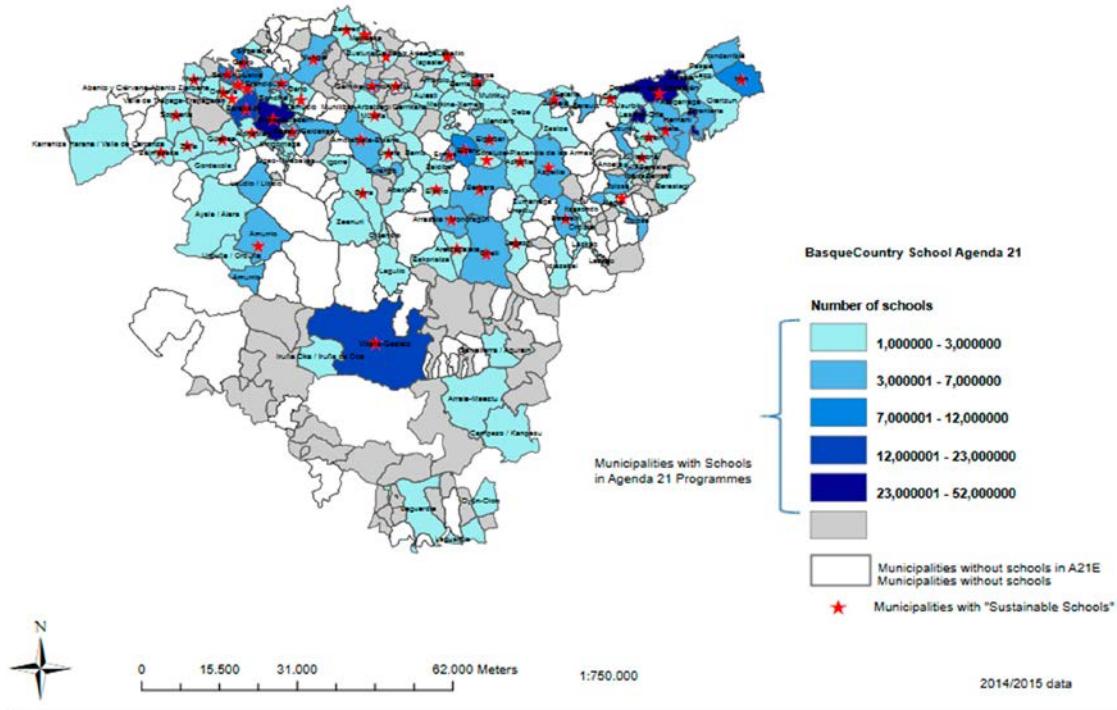
Figure 3. A map of the Basque Autonomous Community, showing schools taking part in School Agenda 21 and municipalities with schools certified as a 'Sustainable School' (for the 2014/2015 school year) (Inguruglea 2015).

2.2. Sample and Research Strategy

When defining the schools for inclusion in the sample, we selected those certified as sustainable schools by the Basque government (some of which are shown in Figure 3 indicated by red stars), to guarantee a certain level of commitment and the realization of activities framed in the SA21 project (Agirreazkuenaga et al. 2017) (pp. 41–42). Similarly, we selected schools located in different socio-economic and geographical settings to obtain a diverse sample.

At schools considered sustainable, a topic is dealt with each year and relevant activities are designed and carried out around this. For example, the topic of the year might be climate change, waste or circular economy and activities to be carried out during the school year are designed around that central axis. These are the profiles of the schools where we carried out the study. At the request of those interviewed, no names are given so as to avoid generating any stigmas.

- School A: This is a public school located in an urban area. At this school they have been working with School Agenda 21 since 2004, and it has been certified as a sustainable school since 2009, a certification that has been renewed every 4 years.

- School B: This is a public school located in a municipality considered to be semi-rural. The link between School Agenda 21 and the municipality is an especially close one as it is the only school in the town. They have been involved in School Agenda 21 together with Ingurugela since 2001 and were certified as a sustainable school in 2010, which was subsequently renewed in 2018.

- School C: This is a private school located in a semi-rural area. The School Agenda 21 project has been in effect in the school since 2007 and they obtained recognition as a sustainable school for the first time in 2016.

- School D: This is a private school located in a semi-urban municipality. The School Agenda 21 project has been put into effect in this school since 2007. They obtained recognition as a sustainable school in 2014. The majority of the students in this school are from that same municipality, with the result that they have a direct link with the town in relation to the local A21.

- School E: This is a private school located in the city center of Vitoria, the capital of Alava. The School Agenda 21 project has been in effect in the school since 2007. They obtained recognition as a sustainable school for the first time in 2009–2010, and this was renewed for the next four years in the 2017–2018 school year.

To obtain specific results from the schools analyzed, we mainly used a qualitative methodology, that is, one "that produces descriptive data—People's own written or spoken words and observable behavior" Taylor and Bogda (Taylor and Bogdan 1984). Through qualitative practices, it is possible to verify that the object studied is made up of a group of subjects and that each subject is in movement, including the social science researcher (Alonso 1998). For that reason, it is necessary to reconstruct and interpret the route created by these subjects. Qualitative analysis proves to be especially relevant in education, given that it is important to understand how teachers and classrooms function before making recommendations for change. And that is the purpose of a deep

qualitative examination of education, which involves understanding and 'paying attention' to the context (Eisner 1998).

The (individual) in-depth interviews were chosen as the main tool, since our selected sample "does not aim for statistical representation, but for a socio-structural typological representation corresponding to the objects of study" (Valles 2007) (p. 68). A total of 38 interviews were conducted with secondary school teachers at 5 schools in the BAC. We chose to analyze this topic from the viewpoint of the teaching staff, as we considered that they play an indispensable and decisive role in generating an education with values oriented towards sustainability. It is worth underscoring that the profiles of the teaching staff interviewed are varied. These include teachers of biology, technology, computers, plastic arts, mathematics, languages, physical educational, philosophy or geography and history. This was in order to obtain a diverse sample that would be as unbiased as possible due to the subjects taught by each of them. Likewise, their ages and professional experience also varied, ranging from people with more than 25 years of experience to others who are in the early years of their professional career. The average age of the teachers ranged from 30 to 50, and there were teachers who had been in the world of education from the start of their careers, while others had previous experience as researchers in the university or even in private companies (Appendix A. These interviews were conducted by the researcher between April and June 2018, followed by different visits to each school. Similarly, the head teachers of the different schools issued a letter agreeing that the school would participate in this research.

To design the interviews (Table 1) we used the Wengraf decision-making scheme with the following steps: (1) Definition of goals and central research questions (CRQ); (2) Translation of each central question into three and seven theoretical questions (TQ); (3) Development of sets of interview questions (IQ) or interview interventions (II) for each theoretical question, taking into account the class of interviewee or informant (Wengraf 2001). Similarly, to carry out point 2, the scheme proposed by Kvale was taken as a reference (Kvale 1996) (p. 131).

The analytical approach employed when dealing with the material transcribed from the interviews basically consisted in an interpretative, socio-linguistic and semiological discourse analysis. This involves a 'qualitative paradigm' (Ritzer 1993) insofar as it is associated with interpretative epistemology (the intersubjective dimension), focusing on the individual subject and in discovering the meaning, motives and intentions of their activity (Cea D'Ancona 1998).

Thematic Research Questions (TRP) (DRQ)	Dynamic Research Questions
	DRQ 1: What was your working experience before you started working here?
TRQ 1: Context: Do their previous working career and background influence the teaching staff's motivation and involvement in the School Agenda 21 programs?	DRQ 2: How long have you been working at this school? Tell me something about your job, the subject you teach, the methodologies you use (games, workshops, individual reflexive tasks…) and other tasks…
TRQ 2: What is the teaching staff's level of knowledge and how do they perceive environmental education²?	When we talk about Environmental Education: what comes to mind/what do you identify it with? What types of projects/methodologies?
	What contact/involvement have you had with Environmental Education at this school?
	(In cases where the topic is dealt with in the classroom): Do you deal with any environmental problems in the classroom (Local or global perspective?)
	How do you think that these programs (Environmental Education) are viewed by the teaching staff? And by the students/their families. Why?
	Specifically with respect to students' families: how do you inform and involve them? How do you see this?
	What things do you think work when

TRQ 3: From the teaching staff's point of view: what are the challenges and opportunities of the SA21?	dealing with the topic of Education for Sustainability? That is, what type of activities, projects, methodologies…
	What do you think are the main challenges?
TRQ 4: What do you know about the concept of sustainability? What attitudes, motivation and behavior do you show/teach?	Are you familiar with the concept of sustainability? What do you understand by, or know about this concept? How would you define it in just three words (what do you associate with the concept)?
	In the specific context of this school, how is this subject dealt with? What do you show?
	How do you deal with this in your personal life? Do you illustrate what you teach in the school with examples of activities taken from your personal life?
	What would you say motivates you to hold that attitude? Do you try to transmit that attitude in class?
TRQ 5: Do you relate sustainability with the holistic and integral idea posited by the SDGs? What knowledge is there about the SDGs and what does moving from the SA21 to the SDGs involve?	Continuing with the topic of sustainability, have you heard anything about the SDGs?
	How do you think this can be included in this new agenda?
	Would it be positive to move from School Agenda 21 to Agenda 2030 involving the SDGs? Why?

Table 1. Interview design scheme.

3. Results

This research is based on qualitative methodologies that uses in-depth interviews (Lindorf and Taylor 2002) with teachers currently working at different schools as its main tool. The following are the principal results arising from the field study, divided into the central blocs previously defined in the interview design.

3.1. Context and Career of Teaching Staff

The principal result is that teachers in public schools have been working between 15 and 30 years and have often changed schools in the course of their career. This is due to the hiring system that incorporates teachers into schools in the public sector, which involves their assignment to a series of schools until they finally obtain a permanent position. Similarly, the majority of the interviewees from public schools with a short career were carrying out substitutions in schools for a period of a few months or at the most for the current school year. Conversely, this situation is not found so widely in the private schools, since the majority of the interviewees had only worked at their particular school or at most in one other. It should be kept in mind that access to private schools is by means of a direct contract with the school.

This question influences the extent to which the teaching staff develop a sense of identification with the school and thus with the School Agenda 21 (SA21) project, with the result that there is a greater sense of identification with the SA21 project in private schools than in public ones. This situation does not necessarily translate into better results in some schools rather than others, but it does affect the ease or difficulty with which the coordinators and the support team can develop their work. Teachers who feel that the school is a part of their life, and not simply a place of work, have assimilated certain tasks to a greater extent, with the result that these tasks now form "part of the school's identity" for the teaching staff and hence also for the students. "At first it required making an effort, but nowadays I consider it to be completely natural" (Oral Source 1, 2018).

On the other hand, interviews were conducted with teachers of different academic subjects like biology, physics, chemistry, physical education, philosophy, languages, mathematics, history and geography, amongst others. In the majority of their discourses, they identified environmental education with teachers in the area of the natural sciences. Nonetheless, some of the teachers in this area insist that the task is not their

responsibility alone. There are also some teachers from the social sciences who identify environmental education with their area, but they are a small minority. The coordinators were from the teaching field of natural sciences in all but one of the five schools studied. Furthermore, it is possible to perceive that the discourse on environmental education is constructed differently depending on whether or not the interviewee proceeds from the social sciences, the natural sciences or technology. Each teacher approaches the topic from their own way of thinking and relates it to the content that they teach in their classroom subject, "For example, I try to get them to reflect about computers, where they come from and where they go when we get rid of them" (Oral Source 2, 2018); "Reflecting on happiness, whether or not material goods make us happy, and what all of that consumption of material things implies for our planet" (Oral Source 3, 2018).

One final point is that the immediate surroundings of each school are not reflected in the activity developed by the teaching staff, as a large part of them are not from the locality where the school is located, above all in the case of the public schools. However, in some private schools, like schools D and E, all the interviewees are from the same locality, which generates a much stronger link to what School Agenda 21 means for the municipality's Local Agenda 21.

3.2. Perception and Understanding of Environmental Education

In the first place, it should be underscored that all those interviewed directly identified environmental education with the SA21 project. In one of the interviews, the interviewee was trying to understand what the purpose of the interview was and asked: "By that I take it that you are referring to Agenda 21?" (Oral Source 4, 2018). This indicates that the name is at least widely known, although at the same time the topic is reduced to SA21.

The picture that emerges is that nobody objects to the need for implementing projects on the topic, they are well-informed and familiar with the socio-environmental problem, and believe that action must be taken to tackle it. Subsequently, however, on a day-to-day basis they do not act in the way they say that they should. That is, the project is perceived as something necessary that must be worked on, but they do not dedicate the

necessary time to it. In some cases, this can be explained by the limited commitment shown, while in other occasions concern is expressed that the topic is not given the importance it merits. In cases where the teachers show concern, they propose ideas like giving it a more 'central' timeslot in the academic timetable, amongst other things.

> "Sometimes, the problem we have in education is that actions which are not evaluated and measured academically—i.e., examined—are left aside and have less weight. My concern is with how to give more time, more weight to the topic . . . in general it is taught in the last hour of class . . . perhaps it should be mid-morning . . . during a central timeslot, to give more importance and presence to the topic. I think that this topic should occupy a central place in today's education" (Oral Source 3, 2018).

Another perception is that a reduced set of ideas is being covered, above all restricted to recycling, "yes, I know they do a lot of things, there is recycling in all classes, there's a bin for plastic, one for paper and one for the rest", according to one literature teacher from school D who continues, "I can't pay much attention to it in my class, because I am teaching the Spanish language; they possibly do more in the natural sciences". Similarly, the idea is stressed that, "a lot of things are being done", which is considered very positive, but there is still a long way to go.

In sum, environmental education is perceived as something very important, something that is essential to work on and there is a lot of talk about the need for change, but little action is taken in that respect. There is still a gap between environmental awareness on the one hand, and the motivation or will to work on the topic in the classroom and obtain conscious attitudes and actions in that respect, on the other.

3.3. Challenges and Opportunities for Continuing to Advance: Keys to Successful Implementation

One of the problems repeatedly encountered is 'time'. It is frequently observed that little time is available for covering all the material in the corresponding school subject itself, and even less   for dedicating classroom time to topics related to SA21, "time is always the obstacle; we have got a program to cover and we have to introduce it into that program, so that it's not just a loose item. That's what I consider to be most difficult, integrating the program and Agenda 21; that's one difficulty and the time available is

another. In our field it is easier or harder to tie it in depending on the topic you are teaching. For example, you can do this with functions but not so easily with square roots" (Oral Source 5, 2018). The teachers mention that there is sufficient classroom time for this topic, but that time is usually spent covering topics that the students find more important or relevant, while those related to SA21 are treated as less important. Additionally, they usually add the comment that their classroom time is "completely filled up with activities". However, they do recognize that carrying out such tasks is a necessary part of their profession as teachers and that without such projects, nothing would be done:

> "On the one hand, you feel disinclined when you find you've received an email: 'You must insert topics like M8, SA21 into your annual plan for teaching Basque' . . . with respect to SA21, yes, I'm very aware of it, I would demand it and obviously I would always do it. And this . . . it makes you feel disinclined, but there's no alternative, because if it depended on our own initiative it wouldn't get done. If they didn't make us, we'd leave it aside . . . at least we've got something programmed. Perhaps due to worry, due to necessities or due to disinclination, but on the other side there's one's own awareness, however small that might be" (Oral Source 6, 2018).

In the same vein, the role of each teacher's awareness or personal involvement is identified as a challenge. That is, the school's project for environmental education is implemented in the school with greater or lesser dedication and effectiveness, depending on the commitment of the teaching staff. Several SA21 school coordinators mentioned that this is the reason why, they turn to those members of the teaching staff who think along the same lines as they do or are the friendliest, to be able to carry out the project.

The importance of the role of the school authorities is an idea repeated at several schools. If the project is implemented strongly by the school authorities, and if they are perceived as firmly believing that the project forms one of the school's central axes, then the teaching staff become involved, irrespective of their personal awareness of the topic, since they understand that it forms part of the school's identity, "from the start the school authorities believed in this project and made available all the necessary tools and resources for carrying it out", according to the SA21 coordinator at school E. The authorities at the same school stated that, "the project coordinator has a high leadership capacity and is also personally very conscious. I believe those are the keys to the

project's success" (Oral Source 7, 2018); "We've been very lucky with the people in charge of the project, the coordinator's personal involvement is notable and her awareness and ethics are highly developed" (Oral Source 8, 2018). Although this is identified as a key idea in all the schools, not all of them have the same working reality, which is identified as an obstacle. This idea is also held by teachers with a lot of experience on working on the topic, who shared their opinions at a meeting and in informal conversations and interviews. They agreed that when a school 'adopts a project as its own', this identification creates a link that naturally results in much greater involvement.

The age of the students the interviewees work with is perceived as a possible obstacle but also as an opportunity. On the one hand, a recurrent idea is that "at that age what students are worried about is what they're going to be doing at the weekend, or what clothes to wear. They're interested in everything except what we're trying to teach them" (Oral Source 9, 2018); "Age is a problem, they're always going to go against what we tell them, they're at that stage in life, adolescence" (Oral Source 10, 2018). On the other hand, "it's true that in primary education they're willing and happy to do all types of activities, with complete enthusiasm, unlike in secondary education. But in secondary education they have a capacity to reflect that enables them to tackle topics in class in a deeper way. For example, this talk that is being given here at the moment by the humanitarian aid worker who works in Lesbos, Greece, could not be done in this way in primary education, and that opens other doors" (Oral Source 8, 2018).

When it comes to identifying opportunities, it is more a question of identifying those activities that work and that must be further developed. In this sense, one clear idea stands out: To obtain positive results and successfully implement the activity, it is essential that it should be something that involves practical experience, in which the student gets involved with her own hands, outdoors, in contact with nature. For example, at school B, the school's SA21 coordinator told us that according to his experience, several projects, talks and other activities were carried out each year. But he believes that the students will remember one activity especially; when they went to clean the town's river.

The need to carry out experimental activities is emphasized, although this is not always possible:

"To be able to write about rain, they have to feel it on their own skin . . .

Yes to theory, but where is the practice? I believe that that is a problem

> with education. The theory gets taught, but then they don't go outside to
> look at the flowers. Perhaps it's because of the pressure of the amount of
> content to be worked on. But I believe that is a mistake. People have to
> touch, to smell, they have to feel it" (Oral Source 11, 2018).

It thus becomes clear that outdoor activities in natural settings have the greatest impact on environmental awareness. However, some obstacles are also encountered, since "all of them are always willing and happy to do activities outdoors, but the problem is when we ask for money, even if it's only 2 euros, in the end there's the mounting cost of all the school materials, and at our school 60% are grant-holders" (Oral Source 10, 2018). This can be perceived as forming an obstacle in the public schools unlike the private ones.

We also encountered the idea of the importance of having a good team with a good leader for obtaining good results. The need to have one person as a referential figure who is seen to believe in the project. For example, at school C they say that for the last two years the project has been coordinated and led by a person who has a lot of contact with most of the staff, unlike the previous coordinator. They mention that they now know each other better and this factor, amongst others, might be one of the keys.

On the other hand, an interesting idea that emerged regarding the approach employed with students is that a negative perspective is often used and this does not help in attaining the goal of raising the students' awareness and sensibility prior to doing the activity. This is mentioned by the social sciences teacher and SA21 coordinator at school B:

> "The students are interested in things. But often things are 'sold' to them
> from a perspective of culpability of the type: 'we do everything badly and
> that's why the world is in a bad state' and so they don't want to know
> anything else about the topic. I think we have to part ways with that
> perspective. For example, in the 3rd year social sciences class many things
> are given a bad evaluation and I think we have to invert that" (Oral Source
> 12, 2018).

Continuing with this line of thought, an interesting reflection was provided by the philosophy teacher at school C. Based on his experience, he thinks that there are many ways of addressing the topic, not just from the perspective of defending the planet, and it might be more effective for getting students to reflect on excessive consumption by approaching it from the perspective of happiness.

"Does this level and form of consumption make us happy? . . . In this way we start to analyze the repercussions of our addiction to consumption, whether or not all these objects fill that vacuum we might feel . . . in the psychology class they can be transversal questions. And of course they are linked to the topics of ecology and caring for the planet. But also to the many traps in our way of living, since we are all under the power of advertising. This can be addressed, not only at the existential level, but also at the level of everyday life, by discussing the lies that are found behind consumerism. In that sense we find a link for dealing with these topics" (Oral Source 3, 2018).

3.4. What is Understood by Sustainability?

In general sustainability is a word that 'frightens'. There is the case of the interviewee who said that it was not a topic that he kept up on and that he did not understand it very well, with the interviewer then having to stress that the aim was not to provide a perfect definition but to determine each person's perception and ideas.

A recurrent idea was sustainability understood as balance, "a balance between what we spend and what we have" (Oral Source 13, 2018); "maintaining natural resources over time" (Oral Source 14, 2018); "finding the balance between what we have . . . and what we need" (Oral Source 5, 2018); "a reflection on what is generated by our life and presence on the planet, what paths we are taking" (Oral Source 15, 2018).

On other occasions, sustainability is only considered in relation to recycling. Once again, we encounter a reductionist idea of what is involved in acting responsibly to respect the environment. Although there is talk about the need to cut down on our consumerist lifestyle and all that it generates etc., this is not the general pattern of thought.

Finally, it should be underscored that sustainability is automatically related to environmental sustainability and that this is a widely-held idea. When we speak of sustainability we are also entering into the game of social and economic sustainability, but this dimension is only mentioned on a couple of occasions. Above all, sustainability is related to the question of gender equality and social equalities.

3.5. Motivation and Intentions: Why Work on Environmental Education?

This question was only included with people who showed an interest in the topic and with the coordinators. Two results were obtained in this respect. On the one hand, there are those who work on this project out of conviction and their own awareness of the topic, and on the other, there are those who, although they are aware of the topic, only work on it 'because it was assigned to us'. Once again we encounter personal motivation.

It should be underscored that the administration (Ingurugela) makes a positive contribution   to doing work on the topic through its provision of support. It provides materials, counselling and training, as well as spaces where experiences can be shared with students. In any case, in spite of that, we once again find that it is personal commitment and sensibility that continue to be the most relevant factors.

All of the people interviewed are convinced that it is a topic that should be worked on, that it is a necessary issue. They are well-informed about the problem and about global socio-environmental crises, the repercussions on the future of the planet and future generations and about the urgent need to pass on these values of respect for the planet and attitudes for a more sustainable life. However, the majority, in spite of repeating this discourse and indicating that they know about the topic, do not work on it in class. Their justification is that this question is not included in their school subject, that they have no time or that it is covered in tutorials.

3.6. Knowledge about the Proposal of the SDGs

The question of the SDGs is not yet a familiar one, and the two schools where it was most discussed are both in the private sector. The reason for this is perhaps that in the private sector every year they make an effort to update themselves and 'keep up with the latest developments' and that is why they started to discuss the SDGs, which they understand to be a key line of work. It is at school E where Agenda 2030 has been most embedded in their activities, with its goals and integral view used as a work tool.

In the context of the SDGs, the interviewees were asked about working on the different programs included at the school (co-education, gender equality, School Agenda 21 etcetera), with all of these integrated under the umbrella provided by School Agenda 21. There are different opinions in this respect. Some consider that it would be ideal if everything were to be integrated as proposed, but that at present the logistics are perhaps not so simple. On this point, some concerns and reflections were expressed about the lack of communication amongst the departments responsible for the different school subjects, "in some cases it can be easier to work together because we are physically close, but everyone gets on with their own concerns" (Oral Source 16, 2018). On the other hand, there is the idea that it is better for each subject to preserve its identity and be kept separate.

4. Discussion

4.1. The Attitude of the Teaching Staff

Environmental education is a tool with a high potential for contributing to social transformation towards a sustainable lifestyle. Education and educational centers play a leading role in implementing sustainable development (Bertschy et al. 2013). Education has a key role to play in activities on the path towards a more sustainable future, although educational practice must be specifically adapted to its target audiences (Pauw et al. 2015). In the specific field of formal education, in all the cases studied in this research, the teaching staff are the key element for successfully putting the programs of environmental education into practice.

In this respect, we observed that individual awareness and sensibility determines the motivation, and thus the work that is done in the school. Our research underscores that the great majority of the teaching staff show concern for the environment; nonetheless, it also reflects the scant commitment to an active pro-environmental position in the classroom or in the personal sphere. Studies carried out from the perspective of environmental psychology, like that of Thomson and Barton (1994), show that in spite of holding values that favor the environment, it is difficult to change personal behavior and involve oneself in change, especially if this calls for sacrifices or involves inconvenience (Thompson and Barton 1994). Some reasons are identified that might affect this disconnection between a pro-environmental attitude and behavior, which tend

to contradict each other. There are several models that analyze this relation amongst values, attitude and conduct, such as Schwartz's scale of ecological values (Schwartz and Bilsky 1987), Dunlap and Van Liere's methodological tool—the New Ecological Paradigm (NEP) (Dunlap et al., 2000; Dunlap, 2008) or Hines, Hungerford and Tomera's model (Hines et al. 1987). What all of these models agree upon is that initially it is necessary to possess information and have a good understanding of the problem, and that the corresponding behavior will come later. It must be borne in ind that the teaching staff are a part of society and therefore their concern about the environmental problem is not necessarily linked to their classroom work, as our study clearly showed.

The current theoretical frameworks of education for sustainability must be embedded in the educational curricula of the teaching staff at teachers' training colleges in order to promote awareness and develop sustainability skills in students, who will be the future teachers. 'Sustainable education' is a necessary, holistic, educational paradigm that advances towards a sustainable culture and lifestyle (Sterling 2004a). It is recommended that for programs on Education for Sustainability to be successful, these "must be holistically integrated into the curriculum and institutional practices" (Chinedu et al. 2018), as they would not work solely on the basis of the individual efforts of some educators. In this sense, it is important to analyze from the perspective of the Sociology of Education, how teachers are trained to deal with the topic of sustainability (Caballero Guisado and Baigorri Agoiz 2018).

4.2. Connecting with Nature

From an analysis of the specific activity of educational projects for sustainability, we can deduce that one of the keys to successful implementation that manages to get people involved and raise their awareness lies in carrying out activities in which they participate. This implies the development of an activity that entails experiencing direct contact with reality and with nature. There is a relation between reconnecting people with nature and their subsequent progress towards a greater environmental sensibility. Recent research carried out in primary and secondary schools in Singapore has shown that, "Nature connectedness counts as a crucial predictor of pro-environmental behavior" (Braun and Dierkes 2017). Similarly, there have been recent research experiences, in Scotland and Canada amongst others places, which showcase the potential of outdoor education for developing pro-environmental sensibility (Crone and Dahl 2012; Higgins and Kirk 2006). Although the potential of experiences outside the

classroom is recognized, the teaching staff bring up certain problems, such as the time availability and budget limitations, to carrying them out.

It is also important to underscore the age at which this type of activities is carried out. In fact, one of the results of our research shows that working with adolescents provides interesting challenges and opportunities, a finding that is also shown by other studies (Braun and Dierkes 2017). Kapalan and Kapalan argue that during adolescence, there is less preference for natural spaces as opposed to more 'developed' spaces. They call this period 'time out', when there is a loss of interest in things related with nature (Kapalan and Kapalan 2002). On the other hand, Crone and Dahl stress the importance of social and affective research as variables for exploring immersion and for better understanding the opportunities for motivational apprenticeship during adolescence in reference to the subjects covered (Nazir and Pedretti 2016).

4.3. Sustainable Development Goals as a Framework for Education for Sustainability

The results also show that one of the keys to success lies in approaching the topic with a holistic or interdisciplinary view, that is, not treating it as a separate school subject that is understood as 'environmental education' or solely in relation to the natural sciences, but instead as something embedded in the curriculum and the study plan of each school subject. In spite of the fact that some schools are already doing this, it continues to pose a challenge, although attention is now being focused on it. It is a question of developing an education in which the concept of sustainability is embedded in a natural way, with education understood as forming a whole. "Schools must teach students about the world we live in, our place in it, and how to sustain and protect the ecosystems that support us all" (Saylan and Blumstein 2011). Education for sustainability requires an interdisciplinary approach that encourages critical thinking and resolving complex problems, which must be addressed from more than one discipline (Zoller 2012). Environmental sensibility is generally understood in terms of recycling, sustainable consumption and visits to natural parks, while cultural sustainability is not well known (Janhonen-Abruquah, Topp, and Posti-Ahokas 2018). In this sense, Agenda 2030 of the SDGs provides an opportunity if it is considered as an accessible tool for starting to work on sustainability in a more integral way, since the SDGs provide a framework for integrating all   the educational subjects and projects. In this context, it is crucial for the effectiveness of education for sustainability that teachers should receive a specific

qualification through the educational offers aligned with the United Nations' SDGs (Bertschy et al. 2013).

5. Conclusions

In the first place, this study showed that key factors for successfully implementing education for sustainability programs are the involvement of the teaching staff, personal motivation and   the leadership of the coordinator, although the support of the school authorities is also needed (complementary focuses). Moreover, the stability of the teaching personnel and their identification with the project are essential. Differences can be established in this respect between public schools and private schools that condition the difficulties of the teaching staff to a certain degree.

The analysis carried out from the perspective of the teaching staff showed that there are different perceptions of the topic depending on their different areas of knowledge, while the prevalent view considered that the topic falls under the scope of the natural sciences. On the other hand, it clearly showed the need to address all the dimensions of sustainability, although there was a problem with integrating contents, above all due to how the departments are structured. Additionally, it has been shown that different approaches can be taken to the problem, for example it can be considered from topics like consumption, philosophy/happiness, etc.

With respect to key educational methodologies, experiential activities outside the classroom are considered to be an opportunity for ensuring the programs' success. The focus on the topic must be a positive one for it to have greater effect. In all the schools studied, environmental education is clearly identified with School Agenda 21, while the support of Ingurugela provides a great opportunity and is a key element for developing the educational programs. Working on the topic of SA21 with secondary school students can pose a challenge (lack of interest) as well as provide an opportunity (capacity for critical argument). With regards to the SDGs, these are still largely unknown to the teaching staff but could provide a good framework for multidisciplinary education.

Finally, as future research that could complement this research, it would be interesting to carry out the same analysis from the perspective of the students and to contrast the perspective of the teaching staff with that of the students, thus obtaining conclusions that reflect this comparison.

References

Agirreazkuenaga, M., Cantera, A., Gutierrez, J. M., & Martinez, J. (2017).
Ecobarómetro escolar de la Comunidad Autónoma del País Vasco. Ingurugela.

Alonso, L. (1998). *La mirada cualitativa en sociología.* Fundamentos.

Bauer, D., Arnold, J., & Kremer, K. (2018). Consumption-Intention Formation in
Education for Sustainable Development: An Adapted Model Based on the
Theory of Planned Behavior. *Sustainability*, *10*(10), 3455.
https://doi.org/10.3390/su10103455

Bertschy, F., Künzli, C., & Lehmann, M. (2013). Teachers' Competencies for the
Implementation of Educational Offers in the Field of Education for Sustainable
Development. *Sustainability*, *5*(12), 5067–5080.
https://doi.org/10.3390/su5125067

Braun, T., & Dierkes, P. (2017). *Connecting students to nature – how intensity of nature
experience and student age influence the success of outdoor education
programs*. *23*(7), 937–949. https://doi.org/10.1080/13504622.2016.1214866

Caballero Guisado, M., & Baigorri Agoiz, A. (2018). *The climate change in the ESO.
Exploring Extremadura case. 11*, 89–100.

Cea D'Ancona, M. A. (1998). El análisis de la realidad social: Aproximaciones
metodológicas. In *Metodología Cuantitativa: Estrategias y Técnicas de
Investigación Social* (Síntesis).

Chinedu, C. C., Wan-Mohamed, W. A., & Ogbonnia, & A. A. (2018). A Systematic
Review on Education for Sustainable Development: Enhancing Tve Teacher
Training Programme. *Journal of Technical Education and Training*, *10*(1).
https://publisher.uthm.edu.my/ojs/index.php/JTET/article/view/1678

Crone, E. A., & Dahl, R. E. (2012). Understanding adolescence as a period of social-
affective engagement and goal flexibility. *Nature Reviews. Neuroscience*, *13*(9),
636–650. https://doi.org/10.1038/nrn3313

Dunlap, R. E., Liere, K. V., Merting, A. G., & Jones, R. E. (2000). *Measuring
endorsement of the New Ecological Paradigm: A revised NEP scale. 56*, 425–
442.

Dunlap, Riley E. (2008). The New Environmental Paradigm Scale: From Marginality to
Worldwide Use. *The Journal of Environmental Education*, *40*(1), 3–18.
https://doi.org/10.3200/JOEE.40.1.3-18

Eisner, E. W. (1998). *El Ojo Ilustrado. Indagación Cualitativa y Mejora de la Práctica
Educativa / The Illustrated Eye. Qualitative Inquiry and Improvement of
Educational Practice* (Paidos).

Eustat. (2019).
http://www.eustat.eus/elementos/ele0011400/Poblacion_de_la_CA_de_Euskadi
_por_ano_de_nacimiento_segun_el_territorio_historico_y_el_sexo/tbl0011424_
c.html

Flecha, R. (2011). The dialogic sociology of education. *International Studies in Sociology of Education*, *21*(1), 7–20.
https://doi.org/10.1080/09620214.2011.543849

Global Fotprint Network. (2018). *World Global Fotprint*.
http://data.footprintnetwork.org/#/countryTrends?cn=5001&type=BCtot,EFCtot

Gobierno Vasco. (2016). *Estrategia de educación para la sostenibilidad del País Vasco 2030 - Basque strategy 2030 for Education for Sustainability*. Servicio central de publicaciones del Gobierno Vasco.

Guerrero, A. (2007). *Gerrero, A. The Double Contribution of Sociology to Teacher Training. 48*, 203–220.

Higgins, P., & Kirk, G. (2006). Sustainability Education in Scotland: The Impact of National and International Initiatives on Teacher Education and Outdoor Education. *Journal of Geography in Higher Education*, *30*(2), 313–326.
https://doi.org/10.1080/03098260600717414

Hines, J. M., Hungerford, H. R., & Tomera, A. N. (1987). *Analysis and Synthesis of Research on Responsible Environmental Behavior: A Meta-Analysis. 18: 2*, 1–8.

Ingurugela. (2019). *The Basque Experience of Education for Sustainability: School Agenda21*. https://www.euskadi.eus/web01-
a2inghez/en/contenidos/informacion/a21e/en_def/index.shtml

Inguruglea. (2015). *Map of the Basque Autonomous Community, schools taking part in School Agenda 21 and municipalities with schools certified as a "Sustainable School"*.
http://www.euskadi.eus/contenidos/informacion/a21e/es_def/adjuntos/MUN.pdf

Janhonen-Abruquah, H., Topp, J., & Posti-Ahokas, H. (2018). Educating professionals for sustainable futures. *Sustainability*, *10*(3), 592.

Kapalan, R., & Kapalan, S. (2002). Adolescents and the natural environment: A time out. In P. H. Kahn & S. R. Kellert, *Children and Nature. Psychological, Sociocultural, and Evolutionary Investigations* (MIT Press, pp. 227–257).

Kvale, S. (1996). *InterViews. An introduction to qualitative*. Sage.

Lauder, H., Brown, P., & Halsey, A. H. (2009). Sociology of education: a critical history and prospects for the future. *Oxford Review of Education*, *35*(5), 569–585. https://doi.org/10.1080/03054980903216309

Leal, A. Z. (2016). Fracaso escolar y relación con el saber. Elementos de comprensión de las teorías sociológicas de base / School failure and relation with knowledge. Elements of comprehension of the sociological theories. *Praxis Educativa*, *20*(2), 13–24. https://doi.org/10.19137/praxiseducativa-2016-200202

Lindorf, T. R., & Taylor, B. C. (2002). *Qualitative communication research methods.* Sage Publications.

Liu, J., Dietz, T., Carpenter, S. R., Alberti, M., Folke, C., Moran, E., Pell, A. N., Deadman, P., Kratz, T., & Lubchenco, J. (2007). Complexity of coupled human and natural systems. *Science*, *317*(5844), 1513–1516.

Nazir, J., & Pedretti, E. (2016). Educators' perceptions of bringing students to environmental consciousness through engaging outdoor experiences. *Environmental Education Research*, *22*(2), 288–304. https://doi.org/10.1080/13504622.2014.996208

Oral source 1: School Agenda 21 Coordinator, school E. Personal communication, 2018.

Oral source 2: Technology teacher, school B. Personal communication, 2018.

Oral source 3: Philosophy teacher, school C. Personal communication, 2018.

Oral source 4: Englih teacher, school B. Personal communication, 2018.

Oral source 5: Mathematics teacher, school C. Personal communication, 2018.

Oral source 6: Basque Language teacher, school C. Personal communication, 2018.

Oral source 7: School Director, school E. Personal communication, 2018.

Oral source 8: Director of studies, school B. Personal communication, 2018.

Oral source 9: English teacher, school D. Personal communication, 2018.

Oral source 10: Natural Science teacher, school D. Personal communication, 2018.

Oral source 11: Physical Education teacher, school A. Personal communication, 2018.

Oral source 12: School Agenda 21 Coordinator, school B. Personal communication, 2018.

Oral source 13: Natural Science teacher, school A. Personal communication, 2018.

Oral source 14: Literature teacher, school D. Personal communication, 2018.

Oral source 15: Physical Education teacher, school B. Personal communication, 2018.

Oral source 16: Chemistry teacher, school B. Personal communication, 2018.

Pauw, J. B. ., Gericke, N., Olsoon, D., & Berglud, T. (2015). *The Effectiveness of Education for Sustainable Development. 7*, 15693–15717. https://doi.org/10.3390/su71115693

Pericault, Y., Kärrman, E., Viklander, M., & Hedström, A. (2018). Expansion of Sewer, Water and District Heating Networks in Cold Climate Regions: An Integrated Sustainability Assessment. *Sustainability*, *10*(10), 3743. https://doi.org/10.3390/su10103743

Ritzer, G. (1993). *Classical Sociological Theory* (MacGraw Hill).

Saylan, C., & Blumstein, D. (2011). *The failure of environmental education (and how we can fix it)*. Univ of California Press.

Schwartz, S. H., & Bilsky, W. (1987). *Toward a universal psychological structure of human values. 53(3)*, 550–562.

Serpa, S. (2018). A Reflection on Sociology of Education. *International Journal of Social Science Studies*, *6*(3), 33–39.

Steffen, W., Grinevald, J., Crutzen, P., & McNeill, J. (2011). The Anthropocene: conceptual and historical perspectives. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, *369*(1938), 842–867. https://doi.org/10.1098/rsta.2010.0327

Sterling, S. (2004). An analysis of the development of sustainability education internationally: evolution, interpretation, and transformative potential. In *Blewitt, J. and Culling- ford, C. (eds), Sustainable Development: A Challenge for Higher Education* (p. 18). Earthscan.

Taylor, S. J., & Bogdan, R. (1984). *Introducción a los métodos cualitativos*. Ediciones Paidós.

Thompson, S. C. G., & Barton, M. A. (1994). Ecocentric and anthropocentric attitudes toward the environment. *Journal of Environmental Psychology*, *14*(2), 149–157.

Turner, B. L., Kasperson, R. E., Matson, P. A., McCarthy, J. J., Corell, R. W., Christensen, L., Eckley, N., Kasperson, J. X., Luers, A., & Martello, M. L. (2003). A framework for vulnerability analysis in sustainability science. *Proceedings of the National Academy of Sciences*, *100*(14), 8074–8079.

Valles, M. S. (2007). *Entrevistas cualitativas*. Centro de Investigación Sociológica.

Waters, C. N., Zalasiewicz, J., Summerhayes, C., Barnosky, A. D., Poirier, C., Gałuszka, A., Cearreta, A., Edgeworth, M., Ellis, E. C., Ellis, M., Jeandel, C., Leinfelder, R., McNeill, J. R., Richter, D. deB., Steffen, W., Syvitski, J., Vidas, D., Wagreich, M., Williams, M., … Wolfe, A. P. (2016). The Anthropocene is functionally and stratigraphically distinct from the Holocene. *Science*, *351*(6269), 2622. https://doi.org/10.1126/science.aad2622

Wengraf, T. (2001). *Qualitative Research Interviewing. Biographoc, narrative and semistructured methods.* Sage.

Zalasiewicz, J., Williams, M., Haywood, A., & Ellis, M. (2011). The Anthropocene: a new epoch of geological time? *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, *369*(1938), 835–841. https://doi.org/10.1098/rsta.2010.0339

Zoller, U. (2012). *Science education for global sustainability: What is necessary for teaching, learning, and assessment strategies?* ACS Publications.

Appendix A Interviewed teachers' profile

School A:

1. Social Science teacher; 35 years of experience as teacher, 22 years in this school.
2. Social Science; 26 years of experience as teacher, 2 years in this school.
3. Physical Education; 31 years of experience as teacher, 18 years in this school.
4. English teacher; 12 years of experience as teacher, 6 months in this school.
5. Natural Science teacher; 12 years of experience as teacher, 6 months

   in this school. School B:

6. Natural Science teacher; 32 years of experience as teacher, 4 years in this school, 4 years as School Agenda 21 coordinator.
7. Social Science teacher; 20 years of experience as teacher, 4 years in this school, 3 years as School Agenda 21 coordinator.
8. Pedagogue; 13 years of experience as teacher, 1 years in this school.
9. Mathematics teacher; 3 years in private sector, 24 years of experience as teacher, 5 years in this school.
10. Physical Education teacher; 18 years of experience as teacher, 2 years in this school.
11. Chemistry teacher; 4 years of experience as teacher, 1 years in this school.
12. Technology teacher; 6 years private sector, 2 years of experience as teacher.
13. English teacher; 35 years of experience as teacher, 11 years in this school.
14. Basque Language teacher; 11 years of experience as teacher, 6 moths in this school.

School C:

15. Natural Science teacher; 12 years of experience as teacher, always in this school; 2 years as School Agenda 21 coordinator.
16. Basque language teacher; 18 years of experience as teacher, 16 years in this school.
17. Philosophy teacher; 18 years of experience as teacher, always in this school.
18. Mathematics teacher; 18 years of experience as teacher, always in this school.
19. Natural Science teacher; 8 years as university research experience; 16 years of experience as teacher always in this school.
20. History teacher; 10 years of experience as teacher, always in this school.
21. Natural Science teacher; 8 years of experience as teacher, 7 years in this school; 2 years as assistance of the School Agenda 21.

School D:

22. Technology teacher; 10 years in private sector; 1 year as teacher in this school.
23. English teacher; 1 year of experience as teacher, always in this school.
24. Literature teacher; 38 years of experience as teacher, always in this school.
25. English teacher; 24 years of experience as teacher, always in this school.
26. Physical Education teacher; 20 years of experience as teacher, always in this school.

27. Social Science teacher; 11 years of experience as teacher, always in this school.
28. English teacher; 1 year of experience, always in this school.
29. Social Science teacher; 40 years of experience as teacher, 10 of those years as school director, always in this school.

   School E:

30. Technology teacher; 10 years in private sector, 7 years of experience as teacher, always in this school.
31. Literature teacher; 16 years of experience as teacher, always in this school.
32. Philosophy teacher; 9 years of experience as teacher, always in this school.
33. Art Teacher; 20 years of experience as teacher, always in this school.
34. Physical Education and Religion teacher; 6 years of experience as teacher, always in this school.
35. English teacher; 15 years of experience as teacher, always in this school.
36. Social Science teacher; 22 years of experience as teacher, always in this school.
37. Natural Science teacher; 24 years of experience as teacher, always in this school and 14 years as School Agenda 21 coordinator.
38. School director; 32 years of experience as teacher; 13 years as teacher and 19 years as school director.

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Secondary students' perception, positioning and insight on Education for Sustainability

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Secondary students' perception, positioning and insight on Education for Sustainability

Leire Agirreazkuenaga; Pedro Manuel Martinez

Abstract

This study aimed to analyse and understand the perception about Education for Sustainability from the perspective of secondary school students in the Basque Autonomous Community by means of a qualitative methodological strategy. Specifically, the study was conducted in four educational centres with a total of 39 students, through discussion groups in a total of eight meetings. Environmental education documents of the centres were analysed, and a non-participatory observation process was also applied. The main results showed that the students had sufficient knowledge and information about the socio-environmental problem; however, their behaviour did not correspond to their way of thinking. In order to generate a real impact on attitudes and habits, environmental education should have, not only more presence in the school curriculum, but more experiential approaches and the implication of school managers.

1. **Introduction**

From the middle of the last century, human impact on the environment has intensified, and at present, we are facing global change in the Anthropocene era (Steffen et al. 2011b). The deepest transformation of the human relationship with the natural world has occurred in the last 60 years. This transformation has led to an unsustainable situation that is reflected in global changes such as pollution, overexploitation, degradation of natural spaces, and climate change (Onaindia, 2018; Randers, 2012).

This global change threatens the survival of the planet (Stern, 2007). Moreover, the environmental damage is a symptom of a more general malaise, which affects the economy and the production system given that the crisis has been fuelled by a policy of destruction of the vital environment of humans, thereby generating humanitarian crises (Bannon and Collier 2003) and significant social inequalities (Hardoon, Fuentes-Nieva, and Ayele 2016).

The approach needed to address this issue must be holistic because it affects the entire planetary system. In this sense, and following the views on *sustainable development* concept from the Brundtland Report, *sustainability science* has emerged as a transdisciplinary science (Bettencourt and Kaur 2011). In the 2000s, this field was transformed and became a unified centre of interest, especially through scientific collaboration among different research centres[3]. This growing trend is reflected in the greater number of articles and publications (Huggett 2017) that show an interest in building a "new science" on sustainability (Theys and Vivien, 2014). Moreover, is also growing the trend of studying Environmental and Sustainability Education withing the framework of sustainability science.

However, sustainability is considered an induced science (use-inspired approach) (Mancebo, 2015; Kajikawa, 2008) whose approach implies applied knowledge and a commitment to advancement, knowledge towards social action (Clark, 2007; Kates, 2011), and a solution-oriented approach (Hernandez-Salinas 2018). The researcher is involved in a problem, and thus is also part of the solution. Thus, studies are conducted at the local level to maintain a dialogue between local and global scales. This research is

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[3] Different editions dedicated to this topic include Proceedings of the National Academy of Sciences of the United States of America (PNAS) 2005 (Clark, 2007); Sustainability: Science, Practice, and Sustainability (Wilson, 2005); and Sustainability Sciences (Komiyama and Takeuchi, 2006).

then developed on that framework were a local empirical study on Environmental Education is drive for the global issue.

1.1   Education for Sustainability and gaps to fill

In view of these global challenges, education is the key to lead society towards the changes that a sustainable future implies (Atkinson and Wade 2015). To achieve real transformation, simultaneous technological advances and a change in attitude and consciousness towards a model of life that adjusts to the Earth's needs are required.

Environmental education has a history of approximately 50 years. Stapp (1969) created the first definition of environmental education based on his theoretical and practical work. With the arrival of sustainable development (Brundtland 1987), Education for Sustainable Development (ESD), as well as Education for Sustainability, began to expand[4].

After years of work in the different areas of this subject, a situation of reflection in reference to practical and experimental learning was presented. The 2030 Agenda presents a process of rethinking its implementation as well as how to employ it in an integral, holistic, and efficient way (Delouhá, et. al., 2019; Tilbury, 1995). However, there are still difficulties in evaluating and identifying some aspects of improvement or change for successful implementation of Education for Sustainability programs.

According to a study by UNESCO – United Nations Educational, Scientific and Cultural Organization - (2014), as a reference in the work of Education for Sustainability, it is understood that the 2030 Agenda must focus on five key factors to promote ESD, namely promote support for the formulation of policies aimed at integrating ESD into education and sustainable development strategies; transform education and training environments through comprehensive approaches; develop the capacities of teachers, educators, and trainers; empower and mobilise young people; and accelerate the adoption of sustainable solutions at the local and community level (pp. 15). Moreover, among the areas prioritized by UNESCO for the *post GAP* (Global Action Plan) approach, one of them is empowering and mobilizing youths, through transformative actions (Chang and Kidman, 2018). Despite the significance of involving

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[4] The conceptual debate has a complex history with divergent opinions (Gonzalez-Gaudiano 2006), which are not discussed in this paper. It is understood that Education for Sustainability holistically integrates sustainability.

students in sustainability efforts, there is not enough knowledge about what they think about environmental problems (Šorytė and Pakalniškienė, 2019).

The importance of empowering and mobilising young people is particularly emphasised, which is an action that has become popular worldwide, taking the youth movement for climate *Fridays for Future* started by 16-year-old Swedish activist Greta Thunberg as an example. Palmer (2002) also showed that participation of people involved in educational projects in the decision-making process is a priority, as it is in research. However, the participation of key actors (such as students) is not common in the literature or in the design of these activities (Benavot 2014). Some authors have claimed a greater voice for students in schools, to strength the teachers' role through its focus in empowering children's learning (Catling, 2014).

Although students are almost never asked what they are interested in studying, when asked, they identify relevant and practical topics (Kidman, 2018). Previous studies have shown that students are more motivated and interested in topics if they had contributed to their choice (Greenwood, 2019). Therefore, knowing how students perceive Education for Sustainability, and what areas they consider essential, is necessary in order to develop an efficient program.

However, it is broadly accepted that there is a gap between environmental knowledge and a willingness to act in a pro-environmental manner. In the case of global warming, it has been demonstrated that the willingness to act is stronger for some actions (Ambusaidi et al., 2012), and that encouraging people that an action is effective, may build-up their willingness to do it (Boyes et al., 2014). Thus, the knowledge of students' recognition of the ability of some specific actions pro-sustainability, will lead to a higher effectiveness of teaching schemes/programs.

Furthermore, it is necessary to know the way in which schools are involved in the practice of sustainability, because it can be a factor in improving the effectiveness of teaching (Bosevska and Kriewaldt 2020).

1.2 Research question and objectives

In this context, the objective of this research is to analyse and understand the perception of Education for Sustainability from the perspective of secondary school students in the Basque Autonomous Community[5]. The final objective of the study was to formulate criteria for a successful educational design and implementation, that can generate change and transformation towards sustainability.

The research questions that guided us in this work are as follows:

R.Q.1. How do secondary school students perceive Environmental and Sustainability Education? Which areas of action do they identify as main ones to work on?

R.Q.2. How do they see themselves into that problematic and actions identified?

R.Q.3. What do they perceive and think about how school addresses those problems and actions? School environmental program?

An analysis focused on the students' view was chosen considering that this dimension is decisive taking into account the role that they play in the social transformation towards sustainability. These generations will be able to generate change or, failing that, suffer the consequences of global change. Moreover, local experiences are relevant for the global issues as sustainability science approach raises.

Specifically, this work was conducted in reference to sustainability in the context of formal education. This study seeks to give students a voice in order to fill a gap in the solution of the problem, to continue advancing in the route towards sustainability, and to provide the tools and the answer to some possible factors to be taken into account to design and conduct Education for Sustainability projects. On many occasions, programs are designed without taking into consideration the vision of those involved. However, there is still a need to understand the perception and opinion of these key agents involved in Education for Sustainability programs.

2. **Background: School Agenda 21 program in the Basque Autonomous Community**

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[5]The Basque Autonomous Community (BAC), is a region of former industrialisation with a population of 2,188,017 inhabitants (Eustat, 2019) and a density of 300 inhabitants/km². Despite being a highly urbanised territory, it is characterised by a culture closely linked to the natural environment and local gastronomy, which are aspects that constitute significant potential in the territory as elements in the transition towards sustainability. The BAC is part of the Spain. However, a particular characteristic to highlight is its independent competences in terms of Education, since it is the Department of Environment and the Department of Education of the Basque Government that have the competence in the educational centers of the BAC.

Contributions to this global problem are discussed through a specific and local case from the perspective of one of the key agents, secondary education students in the context of the School Agenda 21 (SA21) program for environmental education in the Basque Autonomous Community.

In Basque Autonomous Community (BAC) CEIDA centres (Centres for Environmental Education and Research) were created, influenced by the international context were the Local Agenda 21 was defined based on the request of the society, at the International Rio Summit in 1990.Those CEIDA centers are now called Ingurugela, whose objective is to support teachers in the promotion of Education for Sustainability in non-university education centres. SA21 began to be implemented in 2003, and became the backbone of Education for Sustainability in the BAC centres with the support of Ingurugela advisors. Likewise, there were many other initiatives in line with this that arose from civil society, non-governmental organisations, and environmental groups, among others. Currently, there is a proposal for the transition of SA21 to Agenda 2030 taking the former's holistic approach as the axis.

This process is aligned with the recent Strategic Plan for Education for Sustainability of the Basque Country 2030 (Basque Goverment, 2018). This strategy is consistent with the Environment Strategy of the Basque Government 2020 based on the 2015–2030 international agenda of the Sustainable Development Objectives as well as with UNESCO Global Action Plan's specific program on ESD.

In this research, the public institution Ingurugela was taken as a reference for sustainability education in the BAC, although several organisations that also work on this topic were identified. Ingurugela centres are support structures for teachers to promote Education for Sustainability in the non-university education system. They were created in 1990 by the Department of Environment and Department of Education of the Basque Government after identifying the need for the public administration to develop and offer advice regarding Education for Sustainability.

SA21 is an educational program for sustainable development. It forms part of the Research and Experimentation line of work of the Ingurugela educational centres. The annual work of the Ingurugela educational centres is defined on the basis of the Basque Government's Environmental Education Program (Order of 22 June 1998 of the Official Bulletin of the Basque Autonomous Community of 1 October).

The SA21 of the BAC defines three cornerstones: participation of the educational community, sustainable management of the school and municipality and curriculum

innovation. This program is not compulsory, each school choses to integrate de EA21 r not. Since its start, it has been growing and in the 2019-20 course, more that the 60% of the schools are working on it; different levels of implication and action but the agenda has presence in a big number of schools, which shows teaching their adherence and importance.

Through this program, there is also the possibility of getting the certification of 'Sustainable School'. An evaluation system is established in order to measure the quality of experiences in education for sustainability. On the basis of quality criteria, centers that access the evaluation system and pass a minimum will obtain the 'Sustainable School' recognition. (Guzman Alonso and Gutierrez Bastida 2009b)The aim of certification and recognition as a Sustainable School is to distinguish outstanding experiences in the SA21 program. This means recognising the work and quality of the school with respect to education, participation, and sustainability (Agirreazkuenaga 2019).

3. **Methods**

The research methodology and design are identified as part of the grounded theory (Glaser and Strauss 1967); in order to obtain the defined objectives, the use of qualitative methodology was chosen. Through qualitative practices it can be verified that the object studied is a group of individuals and that each individual is in motion, including the social science researcher (Alonso, 1998). The grounded theory is applicable to complex behavioural problems even when the contributing factors have not been identified (Stern, 1980). In addition, the theory has the advantage of being consistent with the empirical evidence owing to its nature of roots in real data (Eisenhardt, 1989).

In education, qualitative analysis is particularly relevant because it is important to understand how students and classrooms work before providing recommendations for change. This is precisely what qualitative research in education implies; it is about understanding and paying attention to the context (Eisner, 1998). For this reason, in the field of education, qualitative methods are recommended in order to understand the dynamics of the classrooms, educational centre, and people who conform to them.

3.1 Sampling

The analysis was conducted in the Basque Autonomous Community. In order to guarantee a certain level of involvement and performance of activities that are part of the SA21 project (Martinez et al., 2017), certified centres were chosen as Sustainable Schools during the sampling and definition of the case studies. They were also from different socio-economic and geographical environments with the purpose of generating a diverse sample.

Sustainable Schools certification means that the schools must have spent a minimum of five years in the SA21 program. Recognition lasts for four school years. A total of 446 schools took part in the SA21 program in the 2018/2019 school year, which is approximately 60% of the schools in the BAC, and 104 schools get the Sustainable School certification. In addition, 119 municipal councils also participated.

Every year a topic is developed in the educational centres, and relevant activities are designed and conducted based on this topic. For example, the topic of the year can be climate change, waste, or circular economy, among others, and the activities to be conducted during the course are designed using the topic as the central axis. The profiles of the centres in which the study was conducted are listed as follows (their name or the municipality in which they are located is not mentioned so as not to generate stigmas and also as per request of the interviewees):

- Centre A: This is a public institute located in an urban area. This centre has been working with SA21 since 2004, and it has been certified as a Sustainable School (with an update every four years) since 2009.

- Centre B: This is a public institute located in a municipality considered semi-rural. The link between SA21 and this municipality is especially close since it is the only institute in the town. Together with Ingurugela, they have been involved in the SA21 project since 2001 and obtained Sustainable School certification in 2010 with its subsequent renewal in 2018.

- Centre C: This is a concerted centre located in a semi-rural area. The SA21 school project has been running in this centre since 2007, and they were recognised as a Sustainable School for the first time in 2016.

- Centre D: This is a concerted centre located in an urban centre. The SA21 school project has been running in the centre since 2007. They obtained their

first Sustainable School certification in the 2009/2010 school year, and it was renewed for the next four years in the 2017/2018 school year

Table 2: School sample summary

	Type	**Area**	**First year of SA21 involvement**
School A	Public	Urban	2009
School B	Public	Semi-rural	2003
School C	Private	Semi-rural	2007
School D	Private	Urban	2007

In reference to the students, secondary education was chosen given that in the academic field of Education for Sustainability there are fewer contributions in this age range than in others, such as in the university field. In addition, it is an age at which students have the capacity to reflect and are developing their personality and understanding and shaping their way of seeing and living life.

The students that participated in the study were secondary school students, that is, students between the ages of 12 and 16. A total of 39 students participated in the study through the methodological tools set out in the next section.

3.2 Methodological instruments and analysis

Discussion groups and observations through a field diary during visits to the centres were used. This field study was conducted between January and June 2019. The first meeting and discussion group began based on the main research questions. Subsequently, the dynamics designed were continued with the Golden Circle as a reference (Appendix I) (Sinek 2015). This tool seeks to deepen and reflect on the reason and sense of performing certain actions. In the specific context of this research, the objective was to generate debate and reflection on the important points from the perspective of the subjects investigated in reference to Education for Sustainability. After this dynamic, the information gathered was shared and a road map was designed (Appendix II) for the students to use as a guide to observe and analyse their school and

family environment. In this manner, the direct involvement of the students was also sought, thereby making them active participants in the research.

A few weeks after obtaining the road map, a second meeting was held. Through a discussion group, the students' information and data collected in reference to their family and school environment were obtained. The research process through discussion groups was consistent with the strategy of a subject in process (of a changing subject) (Ibañez 2015), which is why this methodological tool was considered adequate to answer the research questions and objectives.

A total of eight meetings were held with four different groups of students. These groups were composed of 6 to 10 secondary school students from different courses. As previously mentioned, in the first meeting, the discussion group and dynamics were conducted to generate a road map to be used by the students as a research guide and to share the results obtained in the discussion group in the second meeting (through the observation and analysis of what was defined in the road map).

Likewise, to complete the data obtained by the discussion groups and understand the reality of the centre in reference to the defined research objectives, ethnographic methodologies were also implemented. Ethnography includes qualitative methods that understand the reality in a holistic way, such as the observation of social routines, formal and informal interviews, or the analysis of documents and objects (Lindlof and Taylor, 2002, pp. 17) such as annual reports on the SA21 activities of the centre and memories of the Ingurugela centre, among others. In addition, the informants of the investigation and the space of their main actions are known; "it means understanding the perspectives and problematising the accounts of organisational actors, spatial and temporal, and exploring their local and translocal contexts" (Garsten, 2010, pp.66). In the analysed visits to the centres, informal observations and conversations were conducted and systematised in the field diary. Likewise, there were opportunities to exchange ideas around the subject in informal spaces such as annual meetings and conferences of teachers and students, thereby allowing the researcher to expand the data and information with different sources and actors involved. In order to systematically obtain information from the observations, a script was defined for the field diary (Appendix II).

3.3 Design and procedure

In reference to ethics, authorisation was obtained from the principal of the educational institution where the study was conducted as the person responsible for the students during their stay at the centre.

The participating groups of students were chosen in accordance with some criteria and with the help of the SA21 coordinators. In order to obtain a representation from the four courses of secondary education, two people from each course were selected as participants. In addition, at least one person in each group had participated as or currently participated as an eco-delegate, that is, they were responsible for transmitting the SA21 projects to their peers.

This study was identified as a sectional study conducted at a specific time given that the objective was to understand the attitudes and perception about environmental education at a precise time. Changes in behaviour may have occurred during the investigation, but these changes were not measured because they were not part of the objective of the study.

3.4 Data analysis

Data analysis was conducted through content analysis. The conceptual reference framework of content analysis is understood as the set of interrelated concepts that serve to guide the analysis as well as to evaluate any content analysis already performed (Krippendorff 1990). Voice recording of the meetings and discussion groups was performed to allow for the subsequent transcription of all the information obtained. These transcripts were transformed into a table of contents collection in reference to the items identified by the students as priorities when analysing the research topic.

4. **Results**

The main results of the research are presented divided by each research question.

4.1 Understanding Environmental and Sustainability Education

This section mainly response to the research question 1; 'How do secondary school students perceive Environmental and Sustainability Education? Which areas of action do they identify as main ones to work on?' In the first approach to the groups, the environmental education project that they conduct in the school, was discussed,

including what they understand as environmental education, what vision they have, and how they perceive it and internalise it.

In reference to the projects of SA21, they recognised that recycling is part of these projects. They also mention the Sustainable Development Goals, nonetheless they did not get deep on this comparing to the emphasis they do in the recycling theme. In addition to recycling, it should be noted that they also mentioned other issues that are directly related to the social dimension, such as fair trade. The academic reports of the last two school years showed that they had worked on issues such as fair trade or "The 3 R's", namely Reduce, Reuse, and Recycle, as main topics. Social and environmental work are subjects that the Sustainable Schools should develop. However, the main focus when measuring the knowledge acquired through the program was the environment, which was consistent with the official results of knowledge assessments, namely *Ecobarometer* study (Agirreazkuenaga et al. 2017). Similarly, the students' ideology was limited mainly to environmental issues such as recycling, energy topics, renewable energy, alternatives, and solar panels, as the first things they got in mind regarding the topic

The plastic topic was the most repeated in the first meetings. The vast majority said that in their minds, it is something that is significantly present in the media and also a topic on which they have a large amount of information. Students stated, "I think it is a hot topic now and thus they generate a lot of news" and "On the Everest they found tons of plastic" (School D). In addition, it was observed and verified in the annual report that in School C, the subject has been dealt with through a plastic-free lunch, which encourages the replacement of single-use wrappings with other materials such as containers or cloth bags.

Food waste is another issue they have in mind that has been discussed. "That many times… I don't know if it's sustainability… but the good food we throw away" (School B). They commented specifically with reference to the school canteens, in which a lot of food is wasted. "A piece of bread for example that has not been bitten or mishandled goes to waste" (School D), and from time to time, also referring to the realities of their own homes, they stated that despite trying to reduce waste, something is always thrown away. "In mine, quite the opposite, my parents prepare lots and then save it but usually something goes to waste. We would have to do less" (School C). Likewise, part of the issue is related to the deals offered, which do not help sustainability and food waste reduction owing to the waste habits that may exist, "The simple fact that if you know

you are not going to eat it, you should not serve yourself so much. Many times, you go to the wok and people start to go crazy and end up with five huge plates of food" (School D).

Finally, other themes identified as areas to work on are, consumption in general and energy concern in particular and transport. Regarding mobility and transport, knowledge and concern were perceived, as students spoke of the need to "care for the planet" by reducing the pollution emitted by transport, such as by promoting electric cars. This subjects would be analysed deeper in the following sections.

4.2 The power of habit vs action towards sustainability

This section mainly response to the research question 2: 'How do they see themselves into that problematic and actions identified?' In the second meeting, through the discussion group, some of the statements and thoughts mentioned in the previous dynamic were confirmed. The issue of comfort comes out again when talking about how they feel about the problems and the action they mentioned should everyone be doing for a better future. Consuming a product that has plastic is considered a matter of comfort because changing that habit involves thinking about replacement options, or even sometimes having to pay more to buy something plastic-free, "is not comfortable". "I think we are looking for comfort and the cheapest prices, if it is going to be cheaper to take a plastic bag. People want comfort, if it is better for me to go to the supermarket and take a bag of cookies that has plastic, it doesn't matter, people take it" (School A). Subsequently, when discussing these statements, they mentioned that they themselves are "the people", that is, in most circumstances they would probably act comfortably, except in contexts such as supermarket purchases, where they are very familiarized to the use of fabric bags. The point about "everything starts at the top" was also noted again, referring to the management of the centre as well as the management of supermarkets, among others.

The issue of comfort was also repeated when they spoke about other types of habits, expressing ideas such as "…because we have become accustomed to have everything done for us. They point out Glovo[6] for example, since they travel throughout the city and get paid very little to make home delivery, so that you do not need to move. That is fine, but I think people should pay more for that service" (School C). The issue of habits

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[6] It is a delivery company; they are dedicated to the purchase, collection and shipment of orders in less than an hour through independent distributors known as "glovers".

was again mentioned related to the use of energy. "I put the electronic devices to charge at night, I then unplug them and put them in the drawer. It is a habit" (School A).

While they talk about the topic, it could be seen that despite all the information they had and received, comfort or disinterest for change remained the main choice. One student stated, "What I think is that people complain too much and then nobody does anything. In other words, there are people who do things, but the plastic issue has been around for a long time and sure, now there is a charge on plastic bags, but I think that for only two cents people will continue buying them. I think they will have to change them" (School D).

In the discussion groups, debates about their way of life, what they consume, the buying choices they make, and how this can affect the planet and society were fairly repeated. Consumption is linked to the contamination from its production and the lifestyle. "I think people have an obsession. And I count myself as one of them" (School B), was stated referring to consumption. They exposed topics such as the consumption of clothes or mobiles, and affirmed that these are conversations that they usually have among themselves.

The topics of food, production, and consumption were quite widespread in relation to sustainability, and the students linked them on several occasions. In one of the centres, this constituted the topic of SA21 for 2019. They dealt with the topics of food, commerce, and local products, and what these imply. Therefore, this need was also discussed. This topic was addressed in School B, which was located near a rural area, which also meant that it was close to producers and to possible initiatives aligned with the objective.

4.3 School management as an example to follow

This section responses to the research question 3: 'What do they perceive and think about how school addresses those problems and actions? School environmental program?' The topic of energy in relation to the lighting and heating system of the centres was commonly repeated in all groups, with the problem being roughly the same in different contexts. "The light issue and thus taking more advantage of the sunlight. In our classroom the lights are always on and the blinds down" (School D). "The heating is always on and the windows open. It is very hot; it does not make sense on a sunny day to put the heating so hot". "The heating is on and the window is open" (School C).

In relation to the consumption of heating, it was mentioned that the heating is turned on when they believe that it is not necessary, and that in winter the temperature was set at 21 degrees, which they thought was illogical. They also mentioned several complaints and the lack of understanding from the teaching and direction staff, for instance, "We tell the tutor and he is supposed to tell the principal… but he still has not communicated it because he thinks we are only asking for comfort" (School D).

To sum up, superiors and managers of the scholar centre should take more responsibility in implementing measures towards sustainable management.

In particular, transport to the academic institutions varies greatly in reference to the location of the centre. In terms of mobility in the students' free time, being under the age of 18 and unable to drive, the possibilities to move autonomously are reduced to public transport, biking/skating, or walking. However, it was interesting to see the main means of transport in some of the areas. In this sense, noticeable differences were identified in reference to the location of the centre; for example, in School C, which is located in a semi-rural area, "Normally all the class use the bus" (School C). The use of transportation that offers the school centre as an option was common.

Regarding Environmental Education programs and actions, they consider that they should do more; more quantity and also more continuously; "we talk about climate change one day, we do an activity of cleaning up the river but then, for the next two months maybe we do not talk about it again, or we never have time to do it so" (School B).

The need to communicate and transmit what is done at the level of SA21 in the context of the environmental education program was also highlighted on several occasions to the rest of the students, family, and friends. Students stated, "We aim at sharing the work performed here with other classmates, it is not only for us. We try to share it in the meetings" (School B) and "We have to push people to do things on the subject" (School E). They emphasised that it is necessary to communicate and explain the agenda efficiently, although they pointed out that most of the time they are ignored. "We explain it in class but they don't pay attention to it" (School B), "but that when we are heard, this comes out as a topic of conversation and the classmates do make an effort to take more sustainable actions". "I am ridiculed because I bring the sandwich in an aluminium foil"(School D).

In order to get an idea of the general and main results, a summary table is provided as a more visual content (Appendix III).

5. **Discussion**

5.1 Students' perception of Sustainability Education and its positioning in the identified problems

This study shows that there is a disconnection between theoretical programs of environmental education and the perception and awareness of students, with their movement to action. This gap has also been observed in other studies (Cebrián and Junyent 2015). It is necessary to create a more concrete level of practical situations, such as envisaging a sustainable future, and the role of each student on the path towards achieving it. Some authors have also highlighted the need of an holistic effort within and across courses in teaching institutions to led students to reflect on sustainability from a whole point of view (Zeegers and Clark, 2014)

The competences in sustainability must be able to address the problems in the social and political sphere, but these competences must also work at a personal level by guiding individual decisions and lifestyles (Stoof et al., 2002). This double perspective, namely systemic and personal, requires different approaches for the development of skills. These approaches, which involve cognitive and non-cognitive/affective methodologies, can motivate students to become committed citizens to a sustainable future (Delouhá et al., 2019).

Old habits form a very strong barrier, and the desire for comfort plays an important role in the shaping of pro-environmental behaviours. In this research, the idea that family customs influence people's attitudes was reinforced; if the dominant culture propagates an unsustainable lifestyle, then it is more difficult to have pro-environmental behaviour and the gap between attitude and action will be expanded (Kollmuss and Agyeman 2010). The use of a positive perspective in the discourse is convenient for dealing with the socio-environmental crisis given that having hope is not only a pleasant feeling, but also can function as a motivating force if one controls denial (Ojala 2012).

The School Agenda 21 program seeks to generate critical citizenship that is capable of reflecting and building its own ideas. However, in practice, it is not very clear how to consistently conduct some of the proposals emanating from the constructivism to promote the formation of values through discussions among schoolchildren about specific social problems and behaviours that can be assumed in front of them. On a rational level and in the school environment, students can display ethical and moral

values in the face of human rights and the environment, but they can present different behaviours when going out to the playground or leaving the school (Díaz Barriga 2006). The students of the study sample considered that the subject of environmental education should have more presence in the school schedule, to generate a real impact on attitudes and habits, and to make the actions taken more stable.

Rethinking the pedagogical model and starting to incorporate active tools and methodologies is necessary for the transformation (Steverson, 2007). The Green Pedagogy shows an interesting model to get closer to nature (Freire 2011). Outdoor education (Higgings and Nicol 2018) and live or active pedagogy (de Ochoa 1993) are some of the tools to use as a reference. This way of thinking about education helps to realise it in a holistic way, thereby enabling the incorporation of sustainability in an integral and transverse way in the educational project of the centre.

A key element shown in the results is the need of incorporating the students in the process of defining activities in SA21; the students of the case study do not feel themselves part of the program as they think they should be. In other studies at the university level, it has been shown that the participation of students in the development of ESD programs is key for student satisfaction and confidence in the institution (Perrello-Marín et. al., 2018). To take into account the students' voices and empower them to participate in the decision-making process and activities of the educational centre creates a situation of harmony in which ESD is much more effective. They also have more responsibility in the learning process itself (Perello-Marín et. al., 2018). To promote the prominence of the people involved in environmental education projects and generate a situation of co-creation of knowledge with the participation of students (Chawla 2008) is necessary for the development of more successful programs because the students are the centre of the learning process.

5.2 Students' insights on the way school addresses the environmental program

One of the interesting results from students' focus groups is that they understand the importance of imply in actions towards sustainability, not only themselves, but the managers of the centre and also families and friends. It is fundamental to secure collective decisions and activities between students, teachers, families and the whole community.

Students also perceive in the adult world what in psychology is called double messages, namely one message on how to act and another message on performance (from parents,

teachers, and various social actors, such as broadcasters, actors, and politicians), which works in an opposite manner to what has been previously affirmed (Díaz Barriga 2006). Environmental education has the challenge of working against the current if the messages of certain policies or multinationals are moving in the opposite direction of sustainability. Therefore, it is necessary to take into account the vision of the students, to encourage action with coherent management of the referents' attitude (in this case, of the academic centre) without generating frustration. For this reason, educational programs aligned with Education for Sustainability must be designed and implemented holistically (Jackson and Pang 2017). In the context of a curriculum of wholeness towards sustainability, the systems thinking and practice will help to reflect about where we are going as a universal society (Lazlo, 2012).

The centres, as much as possible, have the responsibility of leading problem-solving actions. The same management of the centre can play a relevant role; examples where creative projects have been initiated can be used as a reference because they have transformed the life of a university campus and have had an impact on the attitudes and behaviour of staff and students (Adombent et al., 2014). This vision is in line with the experiences of whole-school community developed in schools in Melbourne, presenting an approach to embody their meaning of sustainability on a daily basis, based on a systemic whole-school approach (Bosevska and Kriewaldt, 2020).

6. **Conclusions**

The science of sustainability provides an opportunity to approach the academy with empirical cases such as the one raised. One of the main conclusions of the case study on the framework of SA21 was that the secondary school students of the study sample considered that to generate a real impact on attitudes and habits, the subject of environmental education should have more presence in the school schedule because it was considered that most of the actions taken are punctual and without proper follow-up. They claimed to be informed and even aware of the problem, even though there were other conversational priorities among their friends.

However, they considered that for real change, there must be a greater change in consciousness, especially in the context of the management of the educational centres. This vision is in line with the experiences of whole-school approaches for sustainability

other places (Henderson and Tilbury, 2004), that can be a guide for implementing educational practices towards sustainability.

They have the knowledge, but to move from discourse to action, it is necessary to conduct experiential activities and methodologies that give rise to transformation.

For future research, it would be interesting to continue with the same methodology but use a larger sample. In reference to the research process, it was a joint work between the Ingurugela centres and the researchers; therefore, the results contribute to both academic and practical fields for the improvement of the application of local environmental education programs.

Finally, in reference to the methodology, a longitudinal study over time could be conducted for future research as a complement to this work and taking this work as a reference and starting point.

Refecences

Agirreazkuenaga, Leire. 2019. 'Embedding Sustainable Development Goals in Education. Teachers' Perspective about Education for Sustainability in the Basque Autonomous Community'. *Sustainability* 11(5):1496.

Agirreazkuenaga, Miren, Angel Cantera, José Manuel Gutierrez, and Joseba Martinez. 2017. *Ecobarómetro Escolar de La Comunidad Autónoma Del País Vasco.* Bilbao, Spain: Ingurugela.

Aikens, Kathleen, Marcia McKenzie, and Philip Vaughter. 2016. 'Environmental and Sustainability Education Policy Research: A Systematic Review of Methodological and Thematic Trends.' 22(3):333–59.

Alkin, Marvin C., and Anne T. Vo. 2017. *Evaluation Essentials: From A to Z.* Guilford Publications.

Alonso, L. 1998. *La Mirada Cualitativa En Sociología.* Caracas, Venezuela: Fundamentos.

Anon. 2019. 'Eustat'. Retrieved 3 December 2019 (http://www.eustat.eus/elementos/ele0011400/Poblacion_de_la_CA_de_Euskadi _por_ano_de_nacimiento_segun_el_territorio_historico_y_el_sexo/tbl0011424_ c.html).

Argibay, Miguel, Gema Celorio, and Juanjo Celorio. 2009. *Educación Para La Ciudadanía Global. Debates y Desafíos.* Instituto Hegoa. Bilbao.

Atkinson, Hugh, and Ros Wade. 2015. *The Challenge of Sustainability. Linking Politics, Education and Learning.* Bristol University Press. Bristol, UK.

Bannon, Ian, and Paul Collier. 2003. *Natural Resources and Violent Conflict: Options and Actions*. The World Bank.

Basiago, Andrew D. 1995. 'Methods of Defining "Sustainability"'. 3(3):109–19.

Bauer, Deidre, Julia Arnold, and Kerstin Kremer. 2018. 'Consumption-Intention Formation in Education for Sustainable Development: An Adapted Model Based on the Theory of Planned Behavior'. *Sustainability* 10(10):3455.

Bautista Vallejo, José Manuel. 2001. 'Actitudes y Valores: Precisiones Conceptuales Para El Trabajo Didáctico'. 3:189–96.

Beames, Simon, Pete Higgins, and Robbie Nicol. 2012. *Learning Outside the Classroom: Theory and Guidelines for Practice*. Routledge.

Begon, M., J. Harper, and C. Townsed. 2006. *Ecology. From Individuals to Ecosystems.* London. UK: Backwell Publishing.

Benavot, Aaron. 2014. *Education for Sustainable Development in Primary and Secondary Education*. Paris, France: Department Education for Sustainable Development UNESCO.

Benayas, Javier, and Carmelo Marcén. 2019. *Hacia Una Educación Para La Sostenibilidad. 20 Años Después Del Libro Blanco de La Educación Ambiental En España*. CENEAM. Madrid.

Bermejo, Roberto, Iñaki Arto, David Hoyos, and Eneko Garmendia. 2010. *Menos Es Más: Del Desarrollo Sostenible Al Decrecimiento Sostenible*. 52. Cuadernos de trabajo. Bilbao: Instituto Hegoa.

Bertschy, Franziska, Christine Künzli, and Meret Lehmann. 2013. 'Teachers' Competencies for the Implementation of Educational Offers in the Field of Education for Sustainable Development'. *Sustainability* 5(12):5067–80.

Bettencourt, Luis MA, and Jasleen Kaur. 2011. 'Evolution and Structure of Sustainability Science'. 108(49):19549–19545.

Braun, Tina, and Paul Dierkes. 2017. 'Connecting Students to Nature – How Intensity of Nature Experience and Student Age Influence the Success of Outdoor Education Programs'. 23(7):937–49.

Britton, Alan. 2018. 'Citizenship Education'. Pp. 533–37 in *Scottish Education. Fith Edition.*

Brundtland, Gro Harlem. 1987. *Our Common Future. The World Commission on Environment and Development.* Oxford, UK: Oxford University Press.

Caballero Guisado, M., and A. Baigorri Agoiz. 2018. 'The Climate Change in the ESO. Exploring Extremadura Case.' 11:89–100.

Cairns, J. 2006. 'Designing for Nature and Sustainability'. 13:77–81.

Carson, Rachel. 1962. *Silent Spring*. Boston, USA.

Castro, Carlos J. 2004. 'Sustainable Development: Mainstream and Critical Perspectives'. *Organization & Environment* 17(2):195–225.

Cea D'Ancona, M. A. 1998. 'El Análisis de La Realidad Social: Aproximaciones Metodológicas.' in *Metodología Cuantitativa: Estrategias y Técnicas de Investigación Social*. Madrid, Spain.

Cebrián, Gisela, and Mercè Junyent. 2015. 'Competencies in Education for Sustainable Development: Exploring the Student Teachers' Views'. 7(3):2768–86.

Chawla, Louise. 1994. 'Review of Alternative Paradigms in Environmental Education Research'. *Children's Environments* 11(3):256–60.

Chawla, Louise. 2008. 'Participation and the Ecology of Environmental Awareness and Action'. Pp. 98–110 in *Participation and learning*. Springer.

Chinedu, Caleb Chidozie, Wan Azlinda Wan-Mohamed, and &. Ajah Abdurrahman Ogbonnia. 2018. 'A Systematic Review on Education for Sustainable Development: Enhancing Tve Teacher Training Programme'. *Journal of Technical Education and Training* 10(1).

Crone, Eveline A., and Ronald E. Dahl. 2012. 'Understanding Adolescence as a Period of Social-Affective Engagement and Goal Flexibility'. *Nature Reviews. Neuroscience* 13(9):636–50.

Crowther, Jim, Akiko Hemmi, and Eurig Scandrett. 2012. 'Learning Environmental Justice and Adult Education in a Scottish Community Campaign against Fish Farming'. *Local Environment* 17(1):115–130.

Crutzen, Paul, and EF Stoermer. 2000. 'The "Antropocene"'. 41:12.

Delouhá, Jana, Raquel Heras, Ingrid Mulá, Francisca Perez Salgado, and Laura Henderson. 2019. 'Competences to Address SDGs in Higher Education—A Reflection on the Equilibrium between Systemic and Personal Approaches to Achieve Transformative Action'. 11 (13).

Díaz Barriga, Ángel. 2006. 'La Educación En Valores: Avatares Del Currículum Formal, Oculto y Los Temas Transversales'. *Revista Electrónica de Investigación Educativa* 8(1):1–15.

Disinger, J. 1983. 'Environmental Education's Definitional Problem'. *ERIC, Ohio* (2).

Dunlap, R. E., K. V. Liere, A. G. Merting, and R. E. Jones. 2000. 'Measuring Endorsement of the New Ecological Paradigm: A Revised NEP Scale.' 56:425–42.

Dunlap, Riley E. 2008. 'The New Environmental Paradigm Scale: From Marginality to Worldwide Use'. *The Journal of Environmental Education* 40(1):3–18.

Edmondson, Amy C. 2012. *Teaming: How Organizations Learn, Innovate, and Compete in the Knowledge Economy*. Harvard Business School. USA.

Ehrlich, Paul R. 1968. *The Population Bomb*. USA: Ballantine Books.

Eisner, E. W. 1998. *El Ojo Ilustrado. Indagación Cualitativa y Mejora de La Práctica Educativa / The Illustrated Eye. Qualitative Inquiry and Improvement of Educational Practice*. Paidos. Buenos Aires, Argentina.

Flecha, Ramón. 2011. 'The Dialogic Sociology of Education'. *International Studies in Sociology of Education* 21(1):7–20.

Folke, Carl, Reinette Biggs, Albert V. Norström, Belinda Reyers, and Johan Rockström. 2016. 'Social-Ecological Resilience and Biosphere-Based Sustainability Science'. *Ecology and Society* 21(3).

Freire, Heike. 2011. *Educar En Verde.: Ideas Para Acercar a Niños y Niñas a La Naturaleza*. Vol. 21. Grao.

Frey, Diane F. 2017. 'Economic Growth, Full Employment and Decent Work: The Means and Ends in SDG 8'. *The International Journal of Human Rights* 21(8):1164–1184.

Garsten, Christina. 2010. 'Ethnography at the Interface. Corporate Social Responsibility as an Authropological Field of Enquiry'. Pp. 56–63 in *Ethnographic Practice in the Present*, edited by M. Melhuus, J. P. Mitchell, and H. Wulff. New York, USA.

Giangrande, N., R. M. White, M. East, R. Jackson, T. Clarke, M. Saloff Coste, and G. Penha-Lopes. 2019. 'A Competency Framework to Assess and Activate Education for Sustainable Development: Addressing the UN Sustainable Development Goals 4.7 Challenge.' 11(10):2832.

Glaser, B. G., and A. .. Strauss. 1967. *The Discovery of Grounded Theoy*. Aldine. Chicago, USA.

Global Fotprint Network. 2018. 'World Global Fotprint'. Retrieved (http://data.footprintnetwork.org/#/countryTrends?cn=5001&type=BCtot,EFCtot).

Gobierno Vasco. 2016. *Estrategia de Educación Para La Sostenibilidad Del País Vasco 2030 - Basque Strategy 2030 for Education for Sustainability*. Vitoria-Gasteiz, Spain: Servicio central de publicaciones del Gobierno Vasco.

Goldsmith, Edward, and Robert Allen. 1972. *A Blueprint for Survival*. Ecosystems Ltd.

Gonzalez-Gaudiano, E. 2006. 'Environmental Education: A Field in Tension or in Transition?' 12:298–300.

Gonzalez-Geraldo, Jose L. 2018. 'Education in values for citizenship. Strategies and learning techniques'. *Revista Espanola De Pedagogia* 76(269):188–90.

Gore, Timothy. 2015. 'Extreme Carbon Inequality: Why the Paris Climate Deal Must Put the Poorest, Lowest Emitting and Most Vulnerable People First'.

Gough, Annette. 2013. 'The Emergence of Environmnetal Education Researc. A "History" of the Field'. Pp. 13–22 in *International Handbook of Research on Environmental Education*. New York: Routledge.

Groodland, R., and H. Daily,. 1996. 'Environmental Sustainability: Universal and Non-Negotiable'. 6:1002–17.

Grosseck, G., L. G. Tiru, and R. A. Bran. 2019. 'Education for Sustainable Development: Evolution and Perspectives: A Bibliometric Review of Research, 1992-2018'. 11:6136.

Grueneward, D. .. 2003. 'The Best of Both Worlds: A Critical Pedagogy of Place'. 32, 3–12.

Guerrero, A. 2007. 'Gerrero, A. The Double Contribution of Sociology to Teacher Training.' (48):203–20.

Guzman Alonso, Jose Ignacio, and Jose Manuel Gutierrez Bastida. 2009a. *Eskolako Jasangarritasunerantz: Jasangarritasuneko Hezkuntzarako Kalitate Irizpideak*. Eusko Jaurlaritzaren Argitalpen Zerbitzu Nagusia. Vitoria-Gasteiz, Spain.

Guzman Alonso, Jose Ignacio, and Jose Manuel Gutierrez Bastida. 2009b. *Hacia La Sosteniblidad Escolar. Criterios de Calidad En Educación Para La Sostenibilidad. EN: Towards School Sustainability. Quality Criteria in Education for Sustainability.* Eusko Jaurlaritza Argitalpen Zerbitzu Nagusia. Vitoria-Gasteiz, Spain.

Hamilton, M. C. 1991. 'Masculine Bias in the Attribution of Personhood'. 15.

Hardin, Garrett. 1968. 'The Tragedy of the Commons'. *American Association for the Advancement of Science*.

Hardoon, Deborah, Ricardo Fuentes-Nieva, and Sophia Ayele. 2016. *An Economy for the 1%: How Privilege and Power in the Economy Drive Extreme Inequality and How This Can Be Stopped*. Oxfam International.

Hernandez-Salinas, Alberto. 2018. 'Les Relations Entre Les Sciences Environnementales et Les Politiques Dans Le Programme MAB de l'UNESCO En Amérique Latine et Son Adaptation Au Mexique, Au Chili et En Haïti'. Universite Sorbonne Nouvelle - Paris 3, París.

Higgings, Peter. 2002. 'Outdoor Education in Scotland'. 2 (2):149–68.

Higgings, Peter, and Robbie Nicol. 2018. 'Outdoor Learning'. Pp. 538–44 in *Scottish Education. Fith Edition*.

Higgins, Peter, and Beth Christie. 2018. 'Learning for Sustainabilidy'. Pp. 554–64 in *Scotish Education. Fifth Edition*. Edinburgh, UK: Edinburgh University Press Ltd.

Higgins, Peter, and Gordon Kirk. 2006. 'Sustainability Education in Scotland: The Impact of National and International Initiatives on Teacher Education and Outdoor Education'. *Journal of Geography in Higher Education* 30(2):313–26.

Higgins, Peter, Chris Loynes, and Neville Crowther. 1997. 'A Guide for Outdoor Educators in Scotland'. *Adventure Education, Penrith*.

Hines, Jody M., Harold R. Hungerford, and Audrey N. Tomera. 1987. 'Analysis and Synthesis of Research on Responsible Environmental Behavior: A Meta-Analysis.' 18: 2:1–8.

Huggett, Sarah. 2017. 'Sustainability Science Continues to Grow, per Updated Analysis'. *Elsevier*.

Ibañez, Jesús. 2015. 'Cómo Se Realiza Una Investigación Mediante Grupos de Discusión'. Pp. 418–34 in *El análisis de la realidad social. Métodos y técnicas de investigación*.

Ingurugela. 2016. *Anual Report Ingurugela 2016*. Bilbao, Spain.

Ingurugela. 2019a. *Anual Report Ingurugela 2019*. Bilbao, Spain.

Ingurugela. 2019b. 'The Basque Experience of Education for Sustainability: School Agenda21.' Retrieved (https://www.euskadi.eus/web01-a2inghez/en/contenidos/informacion/a21e/en_def/index.shtml).

Inguruglea. 2015. 'Map of the Basque Autonomous Community, Schools Taking Part in School Agenda 21 and Municipalities with Schools Certified as a "Sustainable School"'. Retrieved 3 December 2019 (http://www.euskadi.eus/contenidos/informacion/a21e/es_def/adjuntos/MUN.pdf).

IUCN. 1970. 'Final Report: International Working Meeting on Environmental Education in the School Curriculum'.

Jackson, Liz, and Ming-Fai Pang. 2017. 'Secondary School Students' View of Climate Change in Hong Kong'. 26 (3):180–92.

Janhonen-Abruquah, Hille, Jenni Topp, and Hanna Posti-Ahokas. 2018. 'Educating Professionals for Sustainable Futures'. *Sustainability* 10(3):592.

Jicking, B., and A. .. Wals. 2008. 'Globalization and Environmental Education: Looking beyond Sustainable Development.' 40(1):1–21.

Kapalan, R., and S. Kapalan. 2002. 'Adolescents and the Natural Environment: A Time Out.' Pp. 227–57 in *Children and Nature. Psychological, Sociocultural, and Evolutionary Investigations*. Boston, USA.

Kioupi, Vasiliki, and Nikolaos Voulvoulis. 2019. 'Education for Sustainable Development: A Systemic Framework for Connecting the SDGs to Educational Outcomes'. *Sustainability* 11(21):6104.

Kollmuss, Anja, and Julian Agyeman. 2010. 'Mind the Gap: Why Do People Act Environmentally and What Are the Barriers to pro-Environmental Behavior?' 8 (3):239–60.

Krippendorff, Klaus. 1990. *Metodología de Análisis de Contenido. Teoría y Práctica*. Paisós Ibérica. Barcelona, España.

Kubiszewski, Ida, Robert Constanza, Sharolyn Anderson, and Paul Sutton. 2017. 'The Future Value of Ecosystem Services: Global Scenarios and National Implicaitions'. 26:289–301.

Kvale, S. 1996. *InterViews. An Introduction to Qualitative*. London, UK: Sage.

Landrigan, Philip J., Richard Fuller, Nereus JR Acosta, Olusoji Adeyi, Robert Arnold, Abdoulaye Bibi Baldé, Roberto Bertollini, Stephan Bose-O'Reilly, Jo Ivey Boufford, and Patrick N. Breysse. 2018. 'The Lancet Commission on Pollution and Health'. *The Lancet* 391(10119):462–512.

Latouche, Serge. 2008. *La Apuesta Por El Decrecimiento:?` Cómo Salir Del Imaginario Dominante?* Vol. 273. Icaria Editorial.

Lauder, Hugh, Phillip Brown, and A. H. Halsey. 2009. 'Sociology of Education: A Critical History and Prospects for the Future'. *Oxford Review of Education* 35(5):569–85.

Lavery, A., and J. Smyth. 2003. 'Developing Environmental Education, a Review of a Scottish Project: International and Political Influence'. 9:361–83.

Leal, Armando Zambrano. 2016. 'Fracaso Escolar y Relación Con El Saber. Elementos de Comprensión de Las Teorías Sociológicas de Base / School Failure and Relation with Knowledge. Elements of Comprehension of the Sociological Theories'. *Praxis Educativa* 20(2):13–24.

Lélé, Sharachchandra M. 1991. 'Sustainable Development: A Critical Review'. *World Development* 19(6):607–621.

Lindorf, T. R., and B. C. Taylor. 2002. *Qualitative Communication Research Methods.* London, UK: Sage Publications.

Liu, Jianguo, Thomas Dietz, Stephen R. Carpenter, Marina Alberti, Carl Folke, Emilio Moran, Alice N. Pell, Peter Deadman, Timothy Kratz, and Jane Lubchenco. 2007. 'Complexity of Coupled Human and Natural Systems'. *Science* 317(5844):1513–1516.

Llopis, J. A., and R. Ballester. 2001. *Valores y Actitudes En La Educación. Teorias y Estrategias Educativas. - Values and Attitudes in Education. Theories and Educational Strategies.* Valencia, Spain: Tirant lo Blanch.

McGregor, Callum, Eurig Scandrett, Beth Christie, and Jim Crowther. 2019. 'Climate Justice Education'. in *Routledge Handbook of Climate Justice*. Londo, UK: Routledge.

Mckeown, Rosalyn, and Charles Hopkins. 2003. 'EE ≠ ESD: Defusing the Worry'. *Environmental Education Research* 9(1):117–128.

McNaughton, M. J. 2007. 'Sustainable Development Education in Schottish Schools: The Sleeping Beauty Syndrome'. 13:621–35.

Mcphie, Jamie, and David A. G. Clarke. 2018. 'Nature Matters: Diffracting a Keystone Concept of Environmental Education Research – Just for Kicks'. *Environmental Education Research* 0(0):1–18.

Meadows, Donella H., Dennis L. Meadows, Jorgen Randers, and William W. Behrens III. 1972. *The Limits to Growth*. Univers Books. New York, USA.

Melgar-Melgar, Rigo E., and Charles A. S. Hall. 2020. 'Why Ecological Economics Need to Return to Its Roots: The Biophysical Foundation of Socio.Economic Systems'. 169:106567.

Milenium Esocystems Assessment. 2005. *Ecosystems and Human Well-Being, a Framework for Assessment*. USA: Island Press.

Monroe, M. 2012. 'The Co-Evolution of ESD and EE.' 6(1):43–47.

Mrazek, Rick. 1993. *Alternative Paradigms in Environmental Education Research*. Troy, OH.: North American Association for Environmental Education.

Nazir, Joanne, and Erminia Pedretti. 2016. 'Educators' Perceptions of Bringing Students to Environmental Consciousness through Engaging Outdoor Experiences'. *Environmental Education Research* 22(2):288–304.

de Ochoa, Graciela Amaya. 1993. 'La Pedagogía Activa. Procesos Del Conocimiento e Implicaciones En Las Tareas Del Aula'. *Pedagogía y Saberes* (4):33–42.

Ojala, Maria. 2012. 'Hope and Climate Change: The Importance of Hope for Environmental Engagement among Young People'. *Environmental Education Research* 18(5):625–42.

Onaindia, Miren. 2018. 'Transformar El Mundo: La Agenda de Naciones Unidas Para El Desarrollo Sostenible'. Pp. 363–80 in *Gobernanza para un sistema energético sostenible*.

Palmer, Joy A. 2002. *Environmental Education in the 21st Century: Theory, Practice, Progress and Promise*. Routledge.

Palmer, Joy A., and Philip Neal. 2003a. *The Handbook of Environmental Education*. Routledge.

Palmer, Joy A., and Philip Neal. 2003b. *The Handbook of Environmental Education*. Routledge.

Parra Ortiz, José María. 2003. 'La Educación En Valores y Su Práctica En El Aula'.

Pauw, J. B. .., N. Gericke, D. Olsoon, and T. Berglud. 2015. 'The Effectiveness of Education for Sustainable Development'. 7:15693–717.

Perello-Marín, Maria, Gabriela Ribes-Giner, and Odette Pantoja Díaz. 2018. 'Enhancing Education for Sustainable Development in Environmental University Programmes: A Co-Creation Approach'. *Sustainability* 10(1):158.

Pericault, Youen, Erik Kärrman, Maria Viklander, and Annelie Hedström. 2018. 'Expansion of Sewer, Water and District Heating Networks in Cold Climate Regions: An Integrated Sustainability Assessment'. *Sustainability* 10(10):3743.

Pizmony-Levy, Oren. 2011. 'Bridging the Global and Local in Understanding Curricula Scripts: The Case of Environmental Education'. 55(4):600–633.

Porritt, Jonathon. 2012. *Capitalism as If the World Matters*. Routledge.

Randers, Jorgen. 2012. *2052: A Global Forecast for the Next Forty Years*. Jorgen Randers. USA.

Ribeiro-Duthie, Ana Cristina. 2020. 'SDG 8 Decent Work and Economic Growth'. Pp. 117–133 in *Actioning the Global Goals for Local Impact*. Springer.

Ritzer, G. 1993. *Classical Sociological Theory*. MacGraw Hill. New York, USA.

Robinson, John. 2004. 'Squaring the Circle? Some Thoughts on the Idea of Sustainable Development'. 48(4):369–84.

Rockström, Johan, W. Steffen, Kevin Noone, Åsa Persson, F. Chapin, Eric Lambin, Timothy Lenton, Marten Scheffer, Carl Folke, Hans Schellnhuber, Björn Nykvist, Cynthia de Wit, Terry Hughes, Sander van der Leeuw, Henning Rodhe, Sverker Sörlin, Peter Snyder, Robert Costanza, Uno Svedin, Malin Falkenmark, Louise Karlberg, Robert Corell, Victoria Fabry, James Hansen, Brian Walker, Diana Liverman, Katherine Richardson, Paul Crutzen, and Jonathan Foley. 2009. 'Planetary Boundaries: Exploring the Safe Operating Space for Humanity'. *Ecology and Society*.

Saylan, Charles, and Daniel Blumstein. 2011. *The Failure of Environmental Education (and How We Can Fix It)*. Univ of California Press.

Schein, E. H. 1992. *Organizational Cutlure and Leadership.* Jossey-Bass Inc. San Francisco, USA.

Schein, Edgar H. 2009. *The Corporate Culture Survival Guide*. Vol. 158. John Wiley & Sons.

Schoenfeld, C. A. 1975. 'National Environmental Education Perspectives'. Pp. 43–45 in *Environmental education. Perspectives and prospectives*. Columbus, OH.: ERIC/SMEAC.

Schoenfeld, Clay. 1971. 'Outlines of Environmental Education.'

Schwartz, S. H., and W. Bilsky. 1987. 'Toward a Universal Psychological Structure of Human Values.' 53(3):550–62.

Scottish Government. 2014. *Learning for Sustainability: The Scottish Government's Response to the Report of the One Planet Schools Working Group*.

Serpa, Sandro. 2018. 'A Reflection on Sociology of Education'. *International Journal of Social Science Studies* 6(3):33–39.

Seyfang, Gill. 2003. 'Environmental Mega-Conferences—from Stockholm to Johannesburg and Beyond'. *Global Environmental Change* 13(3):223–28.

Sinek, Simon. 2015. 'The Golden Circle'. *Gumroad. Com, Http://Tinyurl. Com/Golden-Circle-Sinek*.

Stapp, William B. 1969. 'The Concept of Environmental Education'. 1 (1):30–31.

Steffen, Will, Jacques Grinevald, Paul Crutzen, and John McNeill. 2011a. 'The Anthropocene: Conceptual and Historical Perspectives'. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences* 369(1938):842–67.

Steffen, Will, Jacques Grinevald, Paul Crutzen, and John McNeill. 2011b. 'The Anthropocene: Conceptual and Historical Perspectives'. *Philosophical*

Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences 369(1938):842–867.

Sterling, Stephen. 2004a. 'An Analysis of the Development of Sustainability Education Internationally: Evolution, Interpretation, and Transformative Potential'. P. 18 in *Blewitt, J. and Culling- ford, C. (eds), Sustainable Development: A Challenge for Higher Education*. Londo, UK: Earthscan.

Sterling, Stephen. 2004b. *Higher Education, Sustainability, and the Role of Systemic Learning*. edited by P. B. Corcoran and A. E. J. Wals.

Sterling, Stephen. 2010. 'Learning for Resilience, or the Resilient Learner? Towards a Necessary Reconciliation in a Paradigm of Sustainable Education'. *Environmental Education Research* 16(5–6):511–28.

Sterling, Stephen. 2011. 'Transformative Learning and Sustainability: Sketching the Conceptual Ground.' 5:17–33.

Stern, Nicholas, and Nicholas Herbert Stern. 2007. *The Economics of Climate Change: The Stern Review*. cambridge University press.

Steverson, R. B. 2007. 'Schooling and Environmental Education: Contradictions Is Purpose and Practice'. 13(2):139–53.

Stoof, Angela, Rob L. Martens, and Jeroen J. G. Van Merrienboer. 2002. 'The Boundary Approach of Competence: A Constructivist Aid for Understanding and Using the Concept of Competence'. 1 (3):345–65.

Taylor, S. J., and R. Bogdan. 1984. *Introducción a Los Métodos Cualitativos*. Ediciones Paidós.

Thompson, Suzanne C. Gagnon, and Michelle A. Barton. 1994. 'Ecocentric and Anthropocentric Attitudes toward the Environment'. *Journal of Environmental Psychology* 14(2):149–157.

Tilbury, D. 1995. 'Environmental Education for Sustainability: Defining the New Focus of Environmental Edcuation in the 1990s'. 1 (2):195–212.

Turner, Billie L., Roger E. Kasperson, Pamela A. Matson, James J. McCarthy, Robert W. Corell, Lindsey Christensen, Noelle Eckley, Jeanne X. Kasperson, Amy Luers, and Marybeth L. Martello. 2003. 'A Framework for Vulnerability Analysis in Sustainability Science'. *Proceedings of the National Academy of Sciences* 100(14):8074–8079.

UNESCO. 1975. 'The UNESCO-UNEP Environmental Education Programme'.

UNESCO. 1978. *Intergovernmental Conference on Environmental Education: Tibilis USSR, 14-26 October 1977*. París.

UNESCO. 2002. *Education for Sustainability. From Rio to Johannesburgh: Lessons Learnt from a Decade of Commitment.* Paris, France.

UNESCO. 2013. 'Education for Sustainable Development (ESD)'. Retrieved 13 January 2020 (https://unesdoc.unesco.org/ark:/48223/pf0000222120?posInSet=2&queryId=22 756577-8d55-4019-95f2-ce9debb9eea6).

UNESCO. 2014a. *Hoja de Ruta Para La Ejecución Del Programa de Acción Mujndial Educación Para El Desarrollo Sostenible*. Paris, France.

UNESCO. 2014b. *Roadmap for Implementating the Global Action Programme on Education for Sustainable Development*. Paris, France.

UNESCO. 2015. *Incheon Declaration: Education 2030: Towards Inclusive and Equitable Quality Education and Lifelong Learning for All*. Paris, France.

UNESCO Chair. 2019. *Objetivo 17+1: Garantizar La Diversidad Lingüistica y Cultural. UNESCO Chair on World Language Heritage UPV/EHU*.

United Nations. 1972. 'Report of the United Nations Conference on the Human Environment, Stockholm, 5-16 June 1972'.

United Nations. 1992. 'The Rio Declaration on Environment and Development'. 19.

United Nations. 2015. *The Millennium Development Goals Report 2015*.

Usategui, Elisa, and Ana Irene del Valle. 2007. *La Escuela Sola. Voces Del Profesorado.* Fundación Fernando Buesa Blanco Fundazioa. Vitoria-Gasteiz.

Vallance, Suzanne, Harvey C. Perkins, and Jennifer. E. Dixon. 2011. 'What Is Social Sustainability? A Clarification of Concepts'. 42 (3):342–48.

Valles, M. S. 2007. *Entrevistas Cualitativas.* Madrid, España: Centro de Investigación Sociológica.

Venkatesan, Madhavi, and Giuliano Luongo. 2019. *SDG8-Sustainable Economic Growth and Decent Work for All*. Emerald Group Publishing.

Waters, Colin N., Jan Zalasiewicz, Colin Summerhayes, Anthony D. Barnosky, Clément Poirier, Agnieszka Gałuszka, Alejandro Cearreta, Matt Edgeworth, Erle C. Ellis, Michael Ellis, Catherine Jeandel, Reinhold Leinfelder, J. R. McNeill, Daniel deB. Richter, Will Steffen, James Syvitski, Davor Vidas, Michael Wagreich, Mark Williams, An Zhisheng, Jacques Grinevald, Eric Odada, Naomi Oreskes, and Alexander P. Wolfe. 2016. 'The Anthropocene Is Functionally and Stratigraphically Distinct from the Holocene'. *Science* 351(6269):2622.

Wattchow, Brian, and Mike Brown. 2011. *A Pedagogy of Place: Outdoor Education for a Changing World*. Monash University Publishing.

Wengraf, T. 2001. *Qualitative Research Interviewing. Biographoc, Narrative and Semistructured Methods.* London, UK: Sage.

Withrington, David K. J. 1977. 'The UNESCO/UNEP Environmental Programme and Its Implications for British E-E'. Pp. 33–42 in *Environmental Education*, edited by D. Hughes-evans. Pergamon.

Zalasiewicz, Jan, Mark Williams, Alan Haywood, and Michael Ellis. 2011. 'The Anthropocene: A New Epoch of Geological Time?' *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences* 369(1938):835–41.

Zoller, Uri. 2012. *Science Education for Global Sustainability: What Is Necessary for Teaching, Learning, and Assessment Strategies?* ACS Publications.

Appendix I: Participatory dynamics for focus group design: 50'

The original language in which the research was developed was Basque. This document has been translated into English.

  1. First, 5 ' short dynamics to break the ice, know each other.

2. Dynamic

	10' Golden Circle: Mapping why and how we do what we do. Why environmental education/pro-environmental/social actitudes/actions? Hos? What? In a *post-it* each person writes their ideas and they put it in the correspondent place in the circle. → After this, we will have some ideas, concepts on the subject to talk about. Next step, continue specifying.
Objectives	**Expected Results**
The general objective is to obtain a first notion about what drive these students about what is being done in the framework of environmental education. Specifically, what is their motivation, if any, to take this role, look between values, perception.	- Motivation - Concepts - Context

The image cell above contains:

3. Dynamic

15' It is explained why we have done the previous dynamics and their role as researchers through observation. For this it is necessary to generate a road map, to know what we have to look for and be able to make notes, "field notebook". To design that road map they will have to do it together among all. The moderator launches the question "In practice in you day-to-day life, looking at the concepts we have mentioned. What are the key environments where we must act or take into account? The moderator leaves the conversation free, trying not to guide or influence. The participants are based on the ideas/concepts obtained in the previous dynamic.	
Objectives	**Expected Results**
Agreeing on key points for observation that aims to analyze what values/attitudes/motivation their classmates have in reference to sustainability in general, specifically towards the key sections identified. Generate a roadmap for observation.	Design of the road map/observation form.

Appendix II: Sharing of all generated roadmaps: important ideas-conceptions to work on, from the students' perspective.

	What does people around me think? What do I see in my surrounding - family, friends, school?
Recycling	
Re-use	
Waste management	
Transport	
Consumption (natural resources, materials)	
Food consumption	
Fair Trade/Local bussines	
Energy	

Appendix III: Sumary table of results: Reflections of the students in the working groups on the topics discussed.

First phase of group discussion: the educational programme

Most visible topics in the educational program/ curriculum	- recycling - renewable energy - plastic - food waste - fair trade (less known) - transport
Diagnosis on the awareness of the topics	- there is information but people do not act accordingly - habits of waste are maintained

Second phase of group discussion: diagnosis of problems and their causes

Behavior and habits	- what you learn in the classroom stays inside, without impacting much on behaviours outside the school - the preference for comfort prevents changing habits towards more sustainable ones - buying cheap is a priority over other issues - we've got used to getting everything done, without the need to make an effort
Perceptions on sustainable production and consumption	- there is an obsession to consume - consumption is linked to pollution - it is recognized that individual consumption habits impact the planet
Perceptions on energy and transport (in the school)	- we use excess light and heating - the transport used depends on the location of the centers

Reflection on possible solutions at various levels	
Proposals for personal improvement	- We would have to make a little effort, move forward - We should be willing to pay more - Consume locally produced products (stands out in rural areas) - Change of habits: charge the devices at night
Proposals for improvement of	- Environmental Education program should have more presence in the schedule (more quantity and also more continuously) - Responsibilities of the management of the center

school	- Boost the electric vehicle - Lights: become aware of the impact and control unnecessary use - It is necessary to transmit what is done in school agenda 21 to family and friends
Proposals for improvement towards family, friends, society	- Communicate and share - It is necessary to transmit what is done in school agenda 21 to family and friends - When the topic is discussed outside the classroom, it is not always ignored, but sometimes yes. Take advantage of this. - Management responsibility, markets, "everything starts at the top"

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Dear Leire

We are pleased to advise that your revised paper entitled *Secondary students' perception, positioning and insight on Education for Sustainability* has been accepted for publication and will appear in an upcoming issue of IRGEE. You will be notified once it has been assigned to a specific issue.

As papers are published individually online by Taylor & Francis prior to being published in the hard copy issue, your paper will be forwarded for rapid online publication. Can you please complete the attached form and return to us in MSWord format as soon as possible.

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Yours faithfully

A/Prof Gillian Kidman   A/Prof Chew-Hung Chang
                    Editors

Article title:

Evaluating local Environmental and Sustainability Education: a critical analysis of assessment instruments

Author: Agirreazkuenaga, Leire

Paper Submitted to Environmental Education Research Journal (Under review)

Evaluating local Environmental and Sustainability Education: a critical analysis of assessment instruments

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Abstract

There is an identified need to conduct research on local programs implemented by public administrations regarding Environmental and Sustainability Education. The aim of this research is to analyze the perspective, norms and values that all stakeholders involved in ESE policies show through an analysis using the evaluation tools, thus deepening the case study of School Agenda 21 in the Basque Country. This analisis is made using the Schein model of Organizational Culture approach. Shein's Organizational Culture model provides us with an instrument for analyzing norms and values.

Furthermore, a specific objective will be to examine how research with a direct relationship to administrations, could contribute to the evaluation processes by highlighting the virtues and specifically proposing improvements. The results highlight that evaluation research has a high potential for supporting and improving educational programs, and to enhance the links between educational policy and practice. An ultimate objective is to improve the evaluation instrument and consequently influence a greater incidence on awareness and behaviour towards sustainability in the educational community. In this case, reinforcing evaluation items in relation to the outside socio-economic environment and in relation to attitude and behaviour would reinforce the necessary educational actions on the road towards sustainability. ESE assessment will be enhanced if the coordinator is not directly responsible for answering the evaluation questionnaire, but is instead supported by external evaluators. Another recommendation is that there should be reflection on the possibility of obtaining feedback from the students' perspective.

Keywords: evaluation, organizational culture, ESE, policy, School Agenda 21

Introduction

In the situation of global socio-environmental crisis in which we are, we need a citizenry with knowledge and awareness about global issues on sustainability, that are addressed in the Sustainable Development Goals, and for this goal, an education in sustainability is strictly necessary.

In fact, this paper arises from the need to deepen research on educational policies in relation to global environmental problems, climate change and sustainability. This ~~paper emerges from a~~ need was identified by Aikens, McKenzie and Vaughter (2016): "we suggest greater research attention to critical policy theory and methodology, issues of intersectionality, and climate change education policy research". It has also been requested to strengthen and widen policy research in the areas of Environmental Education, Education for Sustainable Development and Climate Change Education (Læssøe et al., 2013; Robottom and Stevenson, 2013).

Environmental Education (EE), also known as Education for Sustainable Development (ESD), refers to learning about the environment. Its definition by Stapp ([1969](#), p. 30) affirmed that EE aims at "producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems and motivated to work towards their solution". Here we refers to the concept of Environmental and Sustainability Education (ESE) based on Tilbury ([1995](#), p. 199): "an approach to education that seeks to interest and involve students in world problems … to prepare them for contemporary reality".

A review of international trends, priorities and challenges in Environmental and Sustainability Education (ESE) has examined ongoing debates about how to engage in combined research and policy making in the field of ESE (van Poeck et al., [2018](#)). Shaxson and Boaz (2020) have suggested that we need to do more research on politics and the relationship between research and policy of ESE, and for achieving such understanding, a deeper knowledge of policy-making mechanisms will help. "Any insights gained through further research in this area would not be limited to ESE alone. By helping us understand policy-makers' perspectives on the use of evidence narratives, ESE researchers could also make a significant contribution to the wider literatures on evidence informed policymaking and research-policy relationships" (Shaxson and Boaz, 2020).

In this context, the evaluation processes developed by ESE programs could provide data-based evidence to guide ESE policy-makers in measuring and observing what does and does not works. In this way they, as policy-makers, can demonstrate one thing or the other with their measurements. Thus, in modern policy-making evaluation processes are very important, especially considering the considerable reliance on data collection (Ozga, 2008) through census or assessments.

Regarding such evaluations in the Educational field, some studies point out that the "number of Environmental Education programs is associated with global processes, as suggested by the world culture approach. Implementation of environmental education, however, varies dramatically and is shaped by domestic forces, as suggested by the local culture approach" (Pizmony-Levy, 2011). In this respect, there is a growth in local policies that seek to promote school engagement with ESE. These local efforts strive to create a systemic change. However, even if these policies are growing in the academic field, we know little about the mechanisms through which evidence is collected and

programs are evaluated, how policies are implemented, and which theory of change is applied (Walker, 1997) through their evaluation mechanisms.

Previous studies on evaluation instruments used in relation to the Environmental Education (EE) programs reveal the predominant use of quality criteria. For instance, some researchers have proposed a short Environmental Literacy Instrument (ELI) for adolescents to address this need, based on four components of environmental literacy: ecological knowledge, hope, cognitive skills and behaviour (Szczytko et al., 2019). Other evaluation tools have been developed to unravel EE resources and identify gaps, through the analysis of the type of knowledge that are valued, the view of science offered and the view of learning (Birdsall and France, 2018). Assessment tools proposed to evaluate Eco-Schools (an international education programme focused on implementing the objectives of Local Agenda 21) for Portuguese schools (involving the national coordinators of the Programme and the Regional Education Authority), content an item, namely "Monitoring and Evaluation", that includes measurements and evaluation of the activities contained in the plan and feedback (Gomes et al., 2012). However, in general, EE practitioners fight to thoroughly evaluate their programs, mostly when they have little time for evaluation.

Having said this, this article seeks to respond to an identified need in this area, to obtain answers regarding the local mechanisms of environmental education policies that arise from a global culture, through analysing the used evaluation systems applied by the competent administrations.

Theoretical framework

ESE aims to enhance a citizenry that has positive attitudes and behaviour towards sustainability, and therefore, it is important to focus on how the desired behaviours can be inculcated and several theories and approaches can be useful to analyse it. The Theory of Change and the Organizational Culture approach are framworks that will be focused on because of their relevance to this study.

Theory of Change
An interesting approach to analyse types of evaluation is the Theory of Change. When talking about theory of change, we refer to a methodology that looks for a causal logic, the objectives that an intervention seeks to achieve and the specific way in which it intends to achieve them. This method is used as a planning tool, but it is also useful for designing and evaluating programs and interventions, especially with social interventions. Every social program is implicitly or explicitly based on a theory about how and why the program works or attempts to work (Weiss, 1995). A theory of change describes how the interventions carried out by a program or an organization produce the necessary results to bring about the expected change. In general, the changes are the result of a complex network of activities that must be carried out.

Following Carol Weiss, stakeholders of community initiatives normally are uncertain about how the change will develop and consequently give little attention to the early

and mid-term changes needed (Weiss, 1995). In this context, the Theory of Change states long-term objectives and then plans backward to detect required conditions (Brest, 2010), consequently it has a significant development in the theoretical and applied evaluation field (Weiss, 1995).

For this reason, the theory of change is also a method used for making an evaluation of the causal logic that social interventions follow. In ESE programs we can design the theory of change that we want to achieve, but its evaluation might not reflect the results of the aims that we want to obtain.

Sustainability and Education are both complex concepts that need an understanding from a holistic view for a real change. For a transformation towards a sustainable future, a Systemic Change is needed, through individuals and also though policies (Peterson, 2016). Therefore, to face sustainability challenges we need information and research regarding all the policies that are already implementing ESE. How are these policies addressing ESE though the public administrations? We have to look further, to see the complete picture; we have to zoom out and be able to identify the kind of information and tools that tell us how the administration thinks in relation to sustainability.
In this context, the concept of Organizational Culture, that refers to the values and beliefs that predict behaviours (Schein, 1990), is a useful approach for analysing the educational system and processes.

Organizational Culture (Schein model) in Environmental and Sustainability Education. why are we using this approach?

When a group of people have developed a degree of cultural formation that implies sharing assumptions, this determines the group's behaviour, rules and norms (Schein, 1983). Culture helps to elucidate some apparently unintelligible aspects of what happens in an organization or group.

Groups and organizations that have a long shared history can develop a common culture, that is, much more than surface and observable expressions. Culture is what a group learns over a period of time through the way it solves its problems, and Organizational Culture (OC) refers to the values and beliefs that provide models of predictable behaviors (Schein, 1990).

Following Schein's conceptual model, the culture of a group has three essential planes or levels: (a) observable artifacts, (b) values, and (c) basic underlying assumptions (Schein, 1990). Based on this model, the artifacts are an image of the values and norms that are behind organizations (Figure 1). Artifacts include different issues, from the way people talk to each other or their style of dressing to other more permanent issues, such as the philosophy of the group (or company).

Through interviews, questionnaires and surveys (evaluation instrument/tool), the values, norms and philosophies of a culture can be analyzed. Values and norms, such as: what is considered more important (the focus): What kind of commitment is promoted among the educational community*, what pillars of sustainability are encouraged more (in case), or what relationship between the municipality (Town Council) and educational community are envisioned.*

This would be comparable to the question that ethnographers ask people to determine why certain observed events happen the way they do.
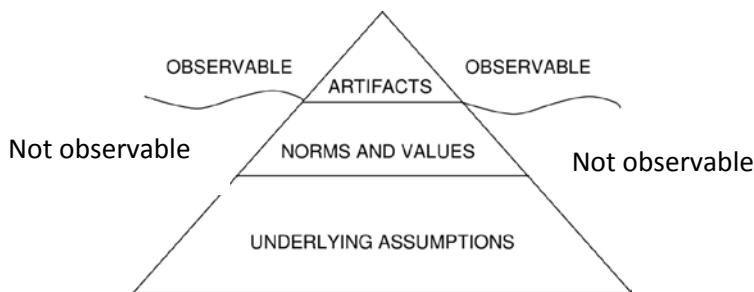

Figure 1: Schein's model Organizational Culture diagram;
artifacts are the observable tip of the iceberg.

All activities that involve training, socialization and organization design can provide an interpretation of how OC affects their functioning. This theory has been applied in various and heterogeneous fields, in fact the first studies and also the most cited ones are from anthropologists, sociologist and landscape managers. The conceptual model has been also applied to analyse the relationship between OC and psychological empowerment of people (workers) (Sotirofski, 2014). The model has been applied in the medical field in general because more and more medical jobs require considerable collaboration amongst the people involved (Schein, 2009), such as the case of surgical groups, because of the intrinsic complexity of surgery itself (Edmondson, 2012).

In the field of education administration, there are some comparisons between OC in different education district offices. In this context, researchers conclude that differences in the leadership and management perspective have an impact on the quality and standard of educational performance (Smith and Beckmann, 2018).

Studies of OC in education organization have also been developed at higher education levels, in order to propose advice for an innovative and better management. In this regard, the proposed solutions have been in relation to changes in the relations of power, communication habits and discursive models (Molek-Kozakowska and Geisler, 2020). Some studies in universities have revealed that leadership styles are the underlying characteristics of OC (Akainji et al., 2019), and that the effect of OC on transformational leadership is significant (Al Issa, 2019).

The issue of OC has also a great potentiality to understand the daily functioning of the schools (Torres, 2005). In the case of European Schools, applying the perspective of OC helped to understand them better, and to apply useful action when school renovation is needed (Dorczak, 2013). Some authors found a relationship between teachers' organizational commitment and school OC (Sezgin, 2010). Moreover, in some Primary Schools it has been recommended that school principals should create an OC to ensure the improvement of individual capacities (Burhanuddin, 2019). Other researchers demonstrated that applied aspects of OC, such as activities and symbols in the environment school, can improve the quality of the education. (Kusumaningrum, 2018). In this sense, some studies identified characteristics of national culturethat influences

the OC and school leadership (Brazilian schools) (de Albuquerque Moreira and Borba Rocha, 2018).

Although this conceptual model and analysis has been broadly applied in some fields like psychology or medicine, and to a lesser extent in higher education organizations, there are few studies on OC in relation to Environmental and Sustainability Education (ESE) organization or administrations, when it can be of great interest for the field. In this context, the application of the OC approach to the analysis of the ESE in this study case can be very enlightening.

The OC approach can be used to make visible the mentality (belief) of the administrations promoting ESE, and what values and assumptions are behind the educational projects developed. In ESE, the artifacts are the surveys that are used to measure the progress or impact of projects, and they bring out the underlying philosophy.

This research is based on OC using an innovative approach in ESE, and it opens a door to a new way of seeing how it is being evaluated through analyzing the instrument of evaluation itself, instead of analyzing the response of certain groups of practitioners, politicians or administration workers and key stakeholders.

We apply this approach to analyse the values underlining the educational system trough analysing the evaluation process. The study case address a critical approach to the use of evaluation instruments focused on the School Agenda 21 (SA21) program, in the Basque Country (Spain), widely consolidated during the last two decades. We also like our results to revert to the program itself, and contribute to a change of people's perceptions and behaviours towards sustainability.

Aims and objectives

We assume that the goal of the SA21 program is to have an impact in the municipality and the school in order to achieve more sustainable practices and attitudes towards sustainability. This is then the principal objective established by the theory of change that must be developed in the program.

We start from the idea that the evaluation system is a reflection of the values and norms the the program containts, and that a critical analyse about evaluation can improve the tool itself, and consequently the ESE and awareness about sustainability, of the stakeholders implied.

In this paper we examine policy artifacts applied in evaluation, as a window for understanding the OC of ESE policy and what these artifacts can tell us about policy commitment with the program. The main objective is to analyze the perspective, norms and values that the stakeholders/responsibles involved in ESE policies show through those evaluation, deepening the case study of the Basque Autonomous Community. Regarding Schein's OC model, the artifact is the survey that gives us a clue about the norms and values that lie behind their program design and evaluation, and how the theory of change is formed in the governance of ESE.

The aim of the study is to analyse with a critical approach the evaluation instrument used in the SA21S Program, in the Basque Country, through a methodology replicable to any other circumstance and context. We assume that the results of the analysis will revert to the program itself, and as a consequence can reorient the evaluation instrument in a way that better responds to the objectives that ESE must necessarily achieve.

In addition, the specific objective will be how research with a direct relationship with the administrations could contribute to these evaluation processes by highlighting the challenges and virtues, and specifically proposing improvements to the assessment.

The research questions that guide us are as follows:

R.Q.1. To what extent does the assessment instrument used by the administrations implementing ESE reflects their theory of change?

R.Q.2: How can research contribute to the design and evaluation processes in ESE to respond to a specific Theory of Change?

Methodology

The context: Basque Country's

School Agenda 21 began to be implemented in 2003 and became the backbone of education for sustainability in the schools of the Basque Autonomous Community[7] (BAC). Support is provided by advisers from *Ingurugela* centers – a network of public facilities to support teachers and school centers, which coordinates plans and programs for environmental education in the non-university educational system. '-of the *Ingurugela* educational centers. The annual work of the Ingurugela educational centers is defined on the basis of the Basque Government's Environmental Education Program (Order of 22 June 1998 of the *Boletín Oficial del País Vasco/BOPV-Official Publication of the Basque Country* of 1 October).

In addition, this is the definition of the school agenda 21:

> An educational program for the sustainable development and quality of the school. It is based on the participation of the community and takes part and collaborates with the sustainable development policies of the municipality, through the *Municipal School Forum*, where the students present to the local representatives, the proposals towards sustainable development policies of the municipality. As an Environmental Education program, its purpose is to develop knowledge, capacities, attitudes, motivation and commitments to do one´s best when tackling environmental problems.
> Its main characteristics are:
> • To bridge two fields: the school and the municipality.
> • The participation of the educational community as the cornerstone of the project.
> • To foster the responsibility and sustainability at management level.
> • To promote the Innovation Curriculum.
> School Agenda 21 is developed around an environmental subject or problem, such as biodiversity, climate change, water, residues, energy, habits of consumption, mobility…whose benchmarks are the goals of the Basque Environmental Strategy.

The stakeholders participating are the school teachers and the coordinator of the program, non-teacher school staff, the *Ingurugela* advisor. A total of 460 schools took

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[7] The Basque Autonomous Community (BAC), is a formerly industrialized region with a population of 2,188,017 inhabitants (Eustat, 2019) and a density of 300 inhabitants/km2. Despite being a highly urbanized territory, it is characterized by a culture closely linked to the natural environment and local gastronomy, which are aspects that constitute significant potential in the territory as elements in the transition towards sustainability. The BAC is part of Spain. However, a particular characteristic worth highlighting is its independent competencies in terms of Education, since it is the Department of Education of the Basque Government that has the competency in the educational centers of the BAC.

part in the SA21 program in the 2018/2019 school year, approximately 60% of the schools in the BAC, and 118 municipal councils also participated. In the definition of School Agenda 21, the idea is to have a close relationship between the schools and the municipalities of the territory where they are located. The schools prepare their own School Agendas 21 in collaboration with other centers in the same town or district. They also take part in the Local Agendas 21 of their municipalities. Each center works on a previously agreed environmental aspect and the improvements proposed by the school children are then presented to the local councils. The municipal authorities listen to the children and young people and respond to the proposals.

The program

The definition of the program in each school involves five phases:

1. Organization and planning: the people responsible for the organization (coordinator, facilitator group, etc.) and the initial planning are set out. (They decide on the issues they are going to address this academic year).
2. Awareness and motivation: fundamental for ensuring the involvement of the educational community. This should be designed via a specific plan. Activities are organized in order to maintain motivation, increase school community awareness (sign a commitment, students eco-committee...).
3. Diagnosis: a snapshot of the preliminary situation of the center is obtained. The three core areas of the program (participation, sustainable management and school curriculum) should be taken into account. It is also an appropriate moment for analyzing the situation of the municipality.
4. Action plan: the set of activities designed to make the education center and its surroundings more sustainable are here defined and planned. Specific improvement targets and actions to achieve them are put forward in order to develop the plan; indicators are also decided upon in order to measure achievements.
5. Communication and assessment: this takes place throughout the process and should be considered as a separate phase as it has its own special nature and characteristics.

The organization of the program in the schools is as follows:

- The **coordinator** is responsible for setting the process underway and leading it.
- The **support team** is formed of people from the teaching staff and school authorities who help in the day to day work of organizing the project.
- The **Environmental Committee** is a participatory space for the whole educational community. The people interested are represented and decide on the main lines of the program (planning, plan of action, evaluation…).
- The county-level **coordination meetings** are a space for cooperation amongst the educational centers. The coordinators of these centers meet periodically with the environmental specialist from the municipality and the adviser from Ingurugela.

The theory of change contained in the program is intended to have an impact in the municipality and the school in order to achieve more sustainable management practices and attitudes. The staff, teachers, students, families and also local authorities are

involved. It is clearly a broad approach where it is understood that the more people from the school community become engaged, the more successful the project will be. So by analyzing the survey as an artifact, we are going to observe how the administration approaches this theory through the evaluation. This analysis is important because the guidance of the program in the future will be guided by the results of the survey for each year, and these results will be on one direction or another, depending the questions answered in the survey.

Evaluative design

The designer is the Administration (regional government)

The evaluation instrument of School Agenda 21 was generated and began to be used in the 2006-2007 school year, with the aim of obtaining the necessary information to improve the program each year. This instrument has essentially remained the same since then, with some small changes made to it in 2015. The design of the questionnaire was done by the work team that prepared the study called Evaluation of the School Agenda 21 Program (2003-2006). This survey is sent before the end of the school year to all the coordinators of School Agenda 21 of the educational centers that participate in the program. It is mandatory to answer it since it is the way of showing the work done and thus justifying the financing obtained to carry out the defined activities.

School Agenda 21 is inspired by the International Local Agenda 21. This influence is shown visually in the survey, through the logo of the School Agenda 21 (Figure 2).

Figure 2.Logo of the SA21

On the other hand, this activity is also part of the work of the *Ingurugela* centers. The way the program is evaluated is explained in Figure 4. It is interesting to observe the logo of these centers, which is formed by puzzle pieces that allude to Planet Earth. It refers to a global task: framing local work within something global.

The instrument of evaluation

With the evaluation a critical reflection is made to reexamine, assess and improve the A21E process. It is done throughout the course, but the end of it is the right moment to assess what has been done and to know to what extent the objectives have been achieved.

The questions are clearly divided into four sections which seek to respond to the different sections and phases of the program (Appendix I). Firstly, some data from the profile of the school and the coordinator are required. Afterwards, the sections are divided as follow:

Section I: Development of the phases of the School Agenda 21 program. Phase 1: Organization and planning; Phase 2: Motivation and awareness; Phase 3: Diagnosis; Phase 4: Action plan; Phase Communication

Section II: Effects of the School Agenda 21 program on school.

Section III: Satisfaction with the School Agenda 21 program

Section IV: Synergy between the School Agenda 21 and the Local Agenda 21/Municipal sustainability.

This division provides us with a quick understanding of what is behind the program. It is important to keep in mind that the different phases of the program planning are the core of the project implementation. Moreover, the aim is also to see how this program is shaping the schools' dynamics, regarding management and curriculum understanding. Finally, by means of this survey the administration (Ingurugela) wants to see how engagement with the local authorities is working in the municipality where the school is located, through the Local Agenda 21.

The questionnaire has a total of 302 items divided into a total of 56 questions (Table 1). When we refer to items, this means to say the sub-questions and the options for possible answers that are provided. It is important to codify the items in a general way, but not the questions, given that in one and the same question reference might be made to different variables. The first 12 questions refer to the information on the school. The following questions refer to the School Agenda 21 program, divided into the sections of the program mentioned above.

A lot of importance is placed on getting data from the program carried out in the school. This makes sense if one considers that one of the main reasons is to justify the financial help that each school receives to develop the project. And it is through this survey that they can explain their activities.

What we code/classified is each item, not each question, since we want to know the options that are given, the approach taken in each question and option of the questionnaire, so as to understand the focus. For example, in the same question there may be various options to choose from and depending on which statements and options are reflected there on one thing or another, we can determine what they have in mind.

	N. Items	N. Questions
School profile (descriptive)	26	12
Section I: phases of the program: organization and planning; motivation and awareness; identified improvements needs; activities towards the Action Plan	156	26
Section II: effects (achievements) of the SA 21	76	7
Section III: degree of satisfaction (from stakeholders)	20	7
Section IV: synergy with municipality- relationship between the SA21 and the Local Agenda 21	25	4
Total	**302**	**56**

Table 1: Survey item and question number and sections

Analyzing the evaluation instrument (artifacts) of program evaluation: survey coding
Every theory of change defined by the experts on the subject, must have an evaluation system, given that in the educational system we are dealing with there is a tendency to evaluate and measure, both to obtain results and to justify funding. In the ESE field,

financing is one of the weak points (UNESCO, 2016), so there is this need of evaluation. On the other hand, policies are also based on these results to advance in one direction or the other (Pizmony-Levy, 2011).

We analyze how data is usually evaluated and how it is used, to understand how the survey tools shape our vision. So it is relevant to take a step back and, instead of analyzing the data, analyze the instrument of evaluation/artifact itself. Regarding Schein's OC model, the artifact is the survey that gives us a clue as to the underlying norms and values and how the theory of change is formed in the governance of ESE. We provide an example for its possible repliclability. Furthermore, we complement our specific study with ideas from key stakeholders in the administration that implements ESE in the Basque Autonomous Community.

Analysis categories

It is no exaggeration to state that questions are a central and basic aspect of survey research. And, as Maria José Azofra affirms, 'the reliability and success of the data collection and therefore of the research depends on the choice and correct statement of each question' (Azofra, 1999: 9).

Moreover, in order to improve communication, the interviewer should try to achieve a responsive attitude and making interviewee feel that the interviewer understands her/him (García Ferrando and , Goig, 2015).

We code the survey to get information on the values that underline the evaluation instrument. Coding is a method for finding descriptive information. Designing a survey involves a specific process of writing and thinking about the questions, options, type of questions, and also measuring validity. In this research, we analyze the content of the questionnaire, accepting that its design has been validated and is reliable. In order to answer research question 1 of this paper, we code the survey, guided by the aim of the research question and objectives. In Table 1 we define the section we analyze, the coding variable and a description of the section.

Coding section	*Variable*	*Description of the section*
Analyse target	*What is the focus*	*Expected achievement (values)*

Type of questions *Answer options*	Open-ended	Through this section we want to look at the type of question they use because they will gives us information about the type of information/answers that are expected. Answers are more or less limited or oriented
Where is the focus/attention?	School Municipality Coordinator Administration	In order to know where attention is placed.
Who is the focus/motivation? *Stakeholders' engagement*	Students Coordinator	In this section we want to see to what extent the stakeholders' engagement is measured and taken into account for assessment; who is the main target, or

	Teacher	the importance of some actors or others.
	School administration	
	Families	
	Others	
	All	
What is the educational aspect/feature?	Curriculum	About which educational aspect they are working on, they want to obtain information; what educational aspect do they pay attention to.
	Co-curriculum (informal/outdoor)	
	Facilities/school management,	
	Others	
Kind of commitment	Knowledge	What type of impact are they looking for.
	Attitudes	
	Environmental Behaviour	
	Participation	
Sustainability pillar that gives reference to	Environmental	Which sustainability pillar do they focus on.
	Social	
	Economical	
	Combination (2)	
	All (3)	
Sustainability topic	Energy	Which topics do they work on and measure.
	Waste	
	Biodiversity	
	Climate Change	
	Health/wellness	
	Food	
	Others	
Others	Action	
	Analysis	
	Awareness	

Organization

Communication

Satisfaction

Impact

Coordination

School-Municipality

Table 2: Survey coding information

The study is complemented by 5 semi-structured interviews (conducted in December 2019) with 4 key stakeholders of the administration (*Inguruglela*), regarding the program, their perception of it and evaluation.

Critical analysis of assessment instrument (findings)
After the introduction of the method and the survey that it is analyzed, we will first provide a descriptive analysis of the survey through the coding, for later correlation analysis based on this data. As expressed in Table 2, the greatest number of items and questions were in relation to the program itself.
Type of questions
One of the main decisions to be made in formulating the questions on a questionnaire is related to the *form of the answer*; that is, if the interviewee is allowed to respond in her own words or if, on the contrary, she must select the response that best suits her own opinion from a series of pre-established categories. In the first case, these are open questions, and in the second case, closed questions.

The choice of open or closed questions depends on a number of situational factors that Lazarsfeld (1935) defined as follows: 1) the objectives of the questionnaire; 2) the degree of knowledge or level of information that the population has on the subject of the question; 3) the degree to which the topic has been previously thought about by the interviewees; 4) the degree to which the population is motivated to communicate on the subject; and 5) the degree to which the interviewer has prior knowledge of the situation of the population to be surveyed with respect to the four previous aspects.
If the objective of the survey goes beyond the mere classification of the population and includes the desire to know something about the frame of reference of the interviewees, or the process by which they have come to support their particular points of view, the most appropriate approach is to ask an open question (García Ferrando and Llopis Goig, 2015). In this sense, the type of questions in the evaluation instrument might not lead us to a better understanding of the theory of change behind the instrument, but it does show us the approach that is sought – more descriptive, simple, for development or reflection.
As previously shown, the questions have been coded according to 4 variables: mark all that apply, multiple choice, open ended, yes/no, since these are the question options that are identified. In general, we see that most of them can be considered 'open' questions, but not to be answered with the interviewee's own words, but rather by choosing between certain answers already stipulated ('mark all that apply'). On certain occasions this can generate a bias involving the pre-stipulated vision of the designer of the questionnaire; on others, however, it can help to achieve greater participation in the response to the questionnaire (it may be easier for the interviewee to have the option of choosing from amongst different answers) and to obtain more unified data.

In this case we find the following data (Fig. 3). We see that the great majority of questions used are the ones that are 'mark all that apply'; that is, they are open-ended questions that provide various options where the interviewee can choose one, or more than one, if they consider it convenient in their particular context. This involves guiding the interviewee, but with a wide range of options to choose from.

The survey designer, the administration in this case, shows an interest in obtaining an answer among a wide range of options, limiting the yes/no questions to 3% of the total questions. For this reason, the 'norms' that we observe are that they seek broad participation in the questionnaire response, as well as information and content that is developed and specific to each experience, despite there being a certain bias. In any case, that 10% of open-ended questions gives interviewees the opportunity to explain in their own words, which is an opportunity to express new things if they want to.
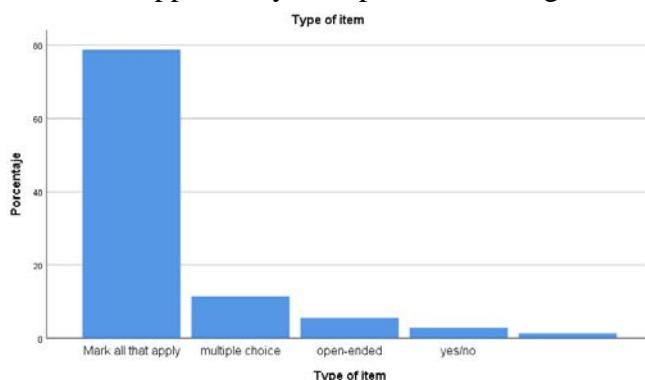

Figure 3: Type of item

Where the focus is placed: Institution/entity: School, Municipality, Coordinator, Administration

In the field of environmental education, one of the key questions in design, application and evaluation/measurement is where we place the focus of the work. In this respect, in this section we want to measure what is considered important, where the focus of the program's importance is placed, the work done and where they believe that the greatest impact of the work should fall.

Specifically in the definition of SA21 in the Basque Country/Autonomous Community, the school is defined as a priority action space, given that this is its field of application. For example, when we refer to the Local Agenda 21, the main focus will be on the program that is implemented at the municipal level, in which School Agenda 21 will be one line, but not the only one.

This is clearly reflected in the results, where the focus on the educational center is seen. This section is clear, but the values defined in this section provide us with more relevant information for our objective (Fig. 4).

We see that working with the municipality gains importance, which is interesting since it is another of the strategic points of the program. On the other hand, the focus on the work of the program coordinator is striking. Is a lot of weight perhaps placed on his or her job?

There is no question that discusses working with the families The norm that we identify is that it is carried out concretely in the school, without making as much reference to what may happen outside once the students leave the school. We could argue about whether or not we believe that this is the approach that should be promoted by the administration. However, the objective of this section is to see what is reflected in these questions and items of the assessment instrument. The norms identified from the

analysis in this section show that the focus is the school, with some reference to the municipality and that the coordinator has a big responsibility.

Focus

Coordinator
Ingurugela
Ingurugela/Admin
Municipality
School
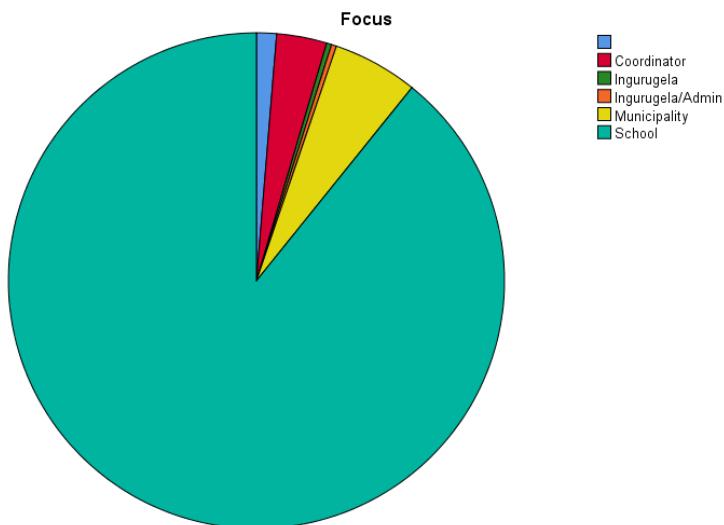
Figure 4: where is the focus of the survey

Stakeholders' engagement (people)
Who is the focus/motivation? Stakeholders' (educational community)
After analyzing where the focus of work is placed, we analyze who the items of the questions refer and are addressed to, who the focus is on. In this respect, we want to measure what kind of stakeholder engagement the administrations are looking at.

As defined in the SA21 handbook, in the educational program, all levels of the school actors/educational community (teachers, students, families and non-teaching workers), have their own place and function, (Benito Iza et al., 2008).

In the data obtained we observe that a high percentage of the items do not refer to people receiving the project (so-called 'none') (Fig. 5). That is, they focus is on other things and not on the receiver. On the other hand, regarding the items that do focus on some group of people, we see that the majority focuses on the administration of the educational center, which would refer to the management of the center in relation to sustainability, for example: "From your perspective, what has been improved in sustainable management?" Furthermore, students are very much present in the survey items.

In relation to the staff, many of the items refer to the work of the program coordinator. This implies that the focus is placed to a great extent on his or her individual work; although reference is also made to the work of the teaching staff or management team, there is a greater focus on the coordinator. Since the same number of items are focused on the teachers in general as are focused on the coordinator, who is a single person, this generates a greater responsibility for him or her. It also reflects that the administration places importance on the level of engagement of these individuals in charge of coordinating the program in each school.
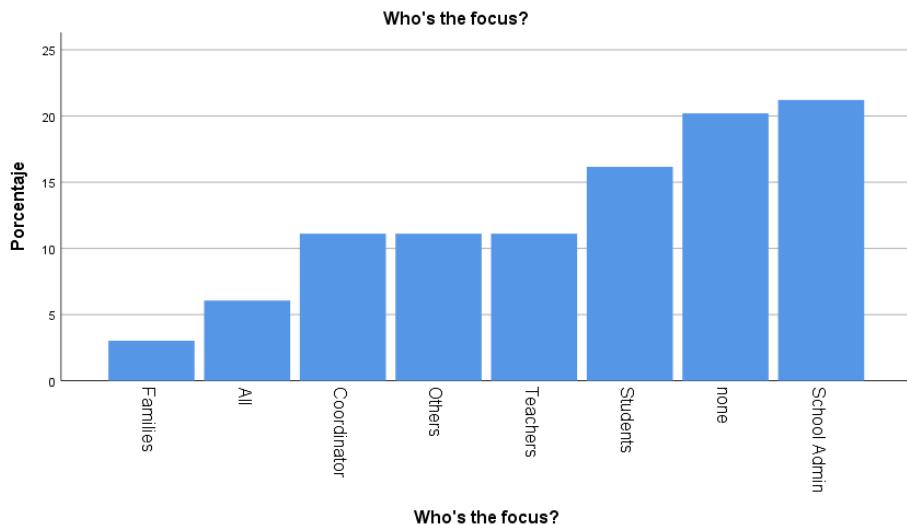
Figure 5: Stakeholder engagement

Relation between where (institution) and who (educational community)

I consider it interesting to carry out this correlation analysis of these sections in which the focus is on *where* and *who*, to see where the variables in each section are located and how they are related. As expected, the greatest correlation is found in the items that refer to school work, given that it is 89.9% of the total items (Fig. 6). Within this section, reference is made above all to the 'School administration', which refers, as we have previously indicated, to the management staff and also to how the center is managed. Items that emphasize school and the school administration refer to questions like "*responsibilities in the development of the project for non-teaching staff, or procedures for collecting contributions from non-teaching staff /Facility improvements: repairs, supplies; Control of consumption: energy; Control of consumption: water; Control of consumption: materials* about maintenance or management. Secondly, it is also important to observe the reference to students as a focus of work in the educational center.
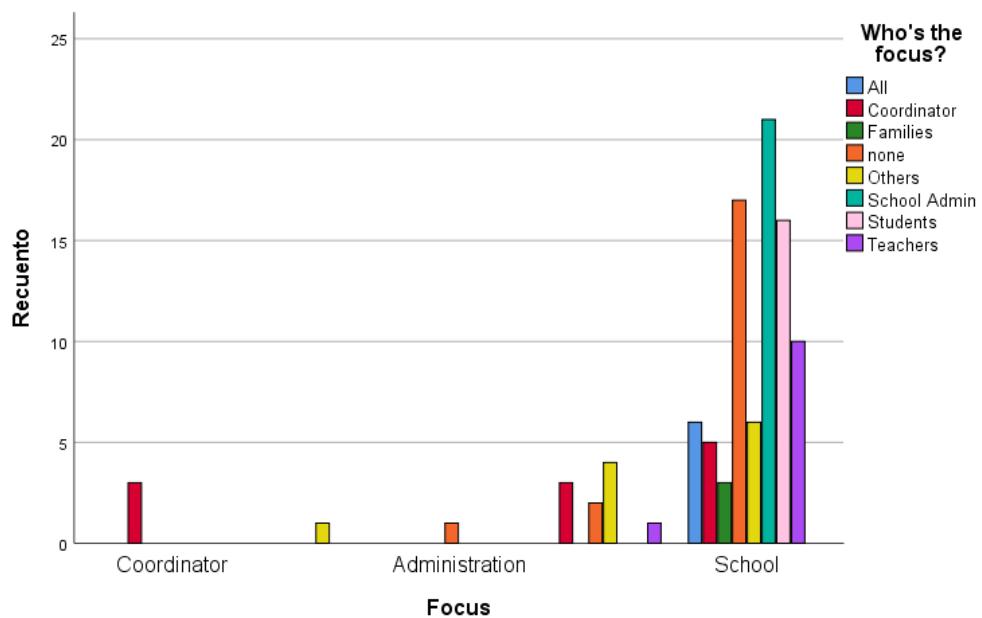
Figure 6: Where the engagement of the stakeholders is

Educational aspect/feature

Kind of commitment

What type of engagement does School Agenda 21 seek to generate? In the definition of the School Agenda 21 program we see that the administration indicates: "As an environmental education program the main objective of the A21E is to develop knowledge, capacities, attitudes, motivation and commitments to intervene in problem solving, both individually and collectively".

Forty-two per cent of the items do not refer to the type of commitment sought. Of the remaining 58%, it is striking that it is a question of measuring the degree of commitment to participation (Fig. 7). In this sense, one of the values of this program that is defined on its roadmap and is also reflected through evaluation is participation. For its part, the knowledge acquired is also something that is given importance; nonetheless, it is something that is not given much attention in the evaluation.

Finally, environmental behaviour and attitudes is not something that receives much attention. There are some items that are aimed at measuring and evaluating this, however they forma very low percentage of the global computation. This could be an opportunity for continuing to work on this aspect later.
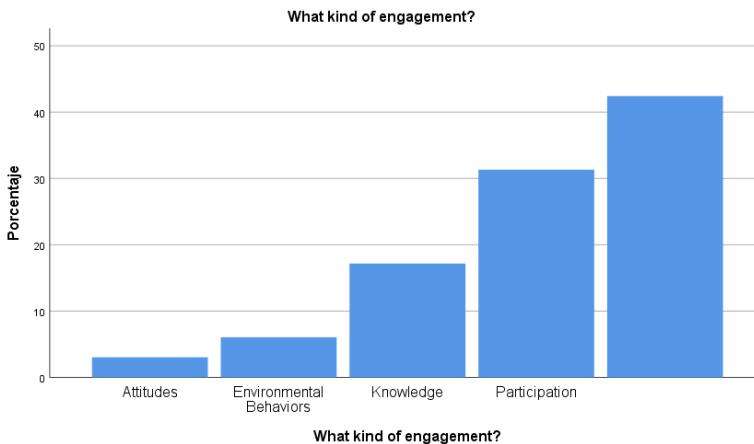
Figure 7: What kind of engagement approach is promoted. **Kind of commitment**

Sustainability pillar referred to

What sustainability means is a broad discussion that we are not going to consider in depth here, but we will explain which sustainability focus we base ourselves on. When talking about the pillars we mean the environmental, economic and social dimension of sustainability (Brudlandt, 1987). We consider that sustainability as a teaching issue has to be an unify matter based on interdisciplinary (Rasmussen, 2017). This is why in this study we defined the variables as: environmental, social, economic, a combination of two of those pillars, and all three of them. Even if we defined all those variables, in the results we see that there are no items referring to the economic or the social pillar alone. Moreover, we appreciate that just 1% of the items focuses on the concept of pillars.

Sustainability topic

When defining this category, we thought it was important to understand what topics were covered and if there more importance is given to one topic or another. However, when looking at the results, we see that there is only one question out of 44 that refers to a particular topic. This is due, on the one hand, to the format of the program itself. The School Agenda 21 program suggests choosing a topic to work on during the course; although perhaps more than one topic can be worked on at the same time, it is suggested that one should be emphasized. This is in question 9, at the beginning of the questionnaire, where data from the school are collected. The question 'Theme of this school year' is asked, and here 15 proposals are reflected: ecological footprint, biodiversity, equity, circular economy, food, energy, municipality sustainable, waste, consumption, soil, mobility, landscape, water, noise, others (please specify). It is interesting to see that the range of topics covers the three pillars of sustainability and does not focus only on the environment. This would be the only question (with its items) that refers to specific topics.

On the other hand, it is important that there is no specific emphasis on a topic since the objective of the agenda is for each educational center to work on what it deems appropriate each year, given its context and the diagnosis made in the specific center. As the same questionnaire is for the whole Basque Autonomous Community and all educational centers, the questions do not focus on specific topics.

Other items

This categorization of the coding will be specific to the type of survey we are analyzing, because we can see that in the design and organization of the survey there are some main areas, which are closely related to the organization and different phases of School Agenda 21 and must be carried out by each school. That is why it is interesting to have a look to these variables, which also indicate the norms and values of the program itself (Fig. 8).
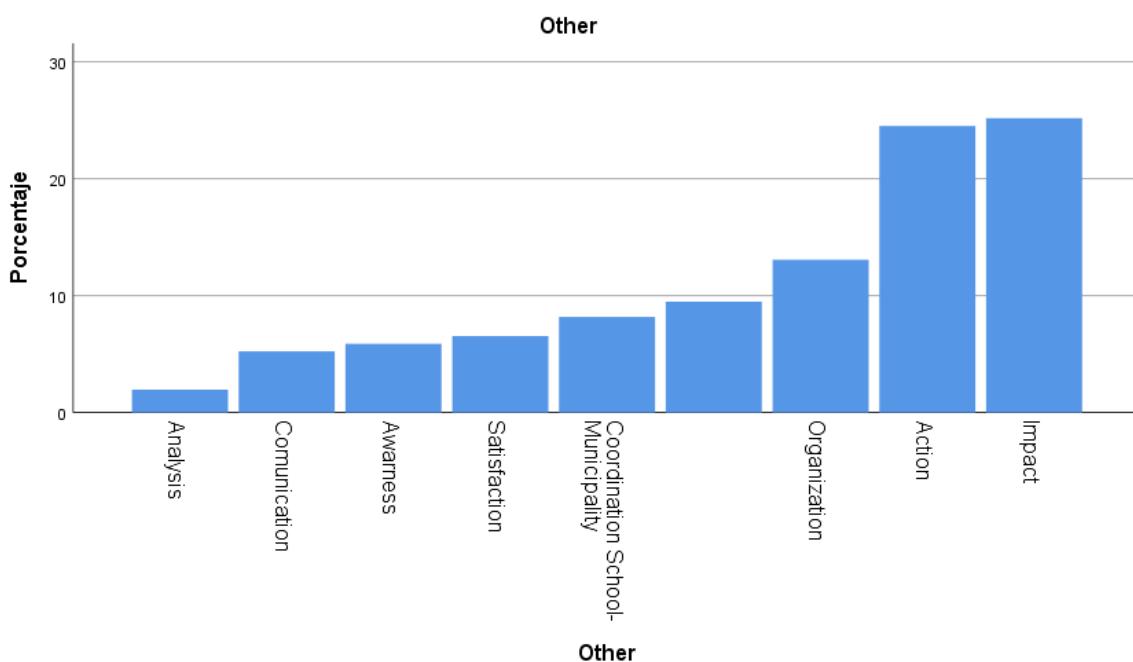

Figure 8: Other aspects of the survey coding

In this section, it is worth repeating as explained above that these questionnaires are answered by the coordinator in charge of the School Agenda 21 program at the center. For this reason, there are some questions that are biased, such as, for example, those questions about the attitude or behaviour perceived by students regarding the project. Perhaps it would be interesting to be able to discuss this with the students. There is the "ecobarometer" project, which is carried out every 4 years, and collects more information from different actors. This is a very interesting indicator and should be implemented more frequently for program improvement. The value of the "ecobarometer" evaluation project lies in the fact that it takes the school community into account. What we obtain from the interviews of the key stakeholders in the administration is that there are always financial issues when it comes to conducting more complete evaluations.

Discussion
The evaluation instrument: how it leads to the theory of change. Strengths and weaknesses
The norms and values identified through the questionnaire in the specific case of the Basque Autonomous Community respond well to the objectives stipulated in the

definition of the program. However, there are some weak points to work on especially regarding the direction future work should take. The identified strengths are the engagement of all the stakeholders to whom attention is paid and the comprehensive vision of the program. As weaknesses, the low presence of measurement of change in attitudes or behaviours is identified; the need for a greater presence of students as an agent of change. It is recommended that there should be reflection on the possibility of obtaining feedback from the students' perspective.

It is necessary to strengthen the partnership between researchers and administrations or policy-makers. The improvement and success of these relationships is usually based on there being a good relationship (Agirreazkuenaga, 2019). Perhaps it is necessary to find a way of working for each context-relationship, through local culture with the global cultural picture in mind.

In the study case, the type of evaluation reflects a high concern with participation, there is a high percentage of items in relation to this and a high commitment from the different stakeholders, which is one of the keys for achieving successful results. The evaluation instrument analyzed also reflects that the administration finds the level of engagement of the person in charge of the coordination of the program in each school especially important, which might generate a greater responsibility in this person.

However, as in some other cases, in the evaluation studied the greatest number of questions was in relation to the program itself and to the school, without many references to what happens once the students leave the school. A large part of ESE evaluation research tends to direct attention to the features and objectives of single programs (Stern et al., 2014), which limits the capacity of researchers to understand the effect of the context (Carleton-Hug and Hug, 2010). However, measuring a broader set of outcomes would improve the ability to achieve broader results and draw more lessons (Hollweg et al., 2011). Moreover, in the questionnaire there are no items referring solely to the economic or the social pillars of sustainability. The reason might be that issues about these two parts are neglected by the SA21 policy. In this framework, schools might not choose a social topic as their target the physical environmental problem.

Although environmental behaviour and attitudes are very important issues in ESE, these items do not have an important presence in the evaluation tool analyzed here. There is broad recognition that knowledge growth doesn't necessarily produce a change of behavior, and that such education programs that focus mainly on providing new knowledge should not be expected to influence behavioural outcomes (Ham, 2013). However, knowledge is the most commonly measured outcome in evaluation programs (Stern et al., 2014), which might be because school curricula focus more on knowledge provision, or because programs are failing to pursue behavioral results. Previous studies have proposed employing methods of evaluation focused on both cognitive and behavioural components, to better indicate success in the matters addressed (Thomas et al., 2019). In relation to the evaluation system, one reason might be that researchers are failing to measure behavioural outcomes, or simply that knowledge is easier to measure.

Regarding questions that bring out where the focus of the work is placed, the majority of these focus on the administration of the educational center, which refers to the management of the center in relation to sustainability. However, students should have a greater leadership role in the educational process, as they are its real protagonists. The

organizational context of the schools can be a limitation for some evaluation programs, nonetheless these evaluations can be an instrument for changing the norms and values, and for identifying and guiding the theory of change we want to develop. Assessments should be conducted with consistency and scientific rigor, especially in education, where results are complex and hard to perceive (Thomson et al., 2003). In the field of environmental education there is a real need for training in community evaluation issues, because teachers and other education professionals are not necessarily specialists in conducting evaluation programs.

Operational proposals to improve the quality of the instrument
One of the items to improve is the necesity to of measure a change in attitudes or behaviours by students. In this regard, we propose the inclusion of a new item in Section I, between P17 and P18 items, namely "How far they have met the objectives set out in the Action Plan specifically for: Green plan, energy, water, materials, biodiversity and so on". Moreover, in Section II, the item P33 should be adapted to get better information on the awareness of students on sustainability, for instance including questions such as: "what sustainable practices in the students day to day have been observed (an open question)".
On the other hand, some changes in the structure of the evaluation process should change in order to strengthen the level of participation of the educational community, specially with a greater presence of students as agents of change. It is also necessary to enhance the partnership between researchers and administrations or policy-makers.

The research[8] contribution to the design and assessment process of administrations in ESE
In this section we will discuss the results of the critical analysis of the assessment instrument and research question 2. Understanding how ESE programs work is as important as knowing what works for a successful implementation and what does not work. Consequently, program evaluators will have to investigate not only program outcomes, but also program influence and processes (Rickinson et al., 2016). In this way, the evaluation should include information about what works well for whom and in what conditions. All participants in the process, such as funders, coordinators, teachers, together with researchers, have to work together to develop an indication about the influence and impact of ESE programs.
Program developers (politicians) should be willing to make explicit not only what activities a program involves, but also how it leads to the *theory of change.*

A greater effort on evaluation and evaluative thinking in teacher education is needed (MacFadden and Williams, 2020.). Researchers could potentially play a stronger role, not only in ensuring appropriate measurements, but in enhancing program design and reformulation (Monroe, 2010). The ESE evaluation research has a high potential for supporting and improving educational programs. For instance, in this case study reinforcing items in relation to the outside socio-economic environment and in relation

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[8] We understand research as the action of obtaining conclusions and presenting them to decision-makers (Alkin & Vo, 2017), whereas evaluation makes a judgment and provides recommendations for program improvement.

to attitude and behavior, would reinforce the necessary educational actions on the road towards sustainability. Moreover, the ESE program would be enhanced if the coordinator was not directly responsible for answering the evaluation questionnaire, but was supported by external evaluators instead. In any case, a variety of methods and approaches are needed to evaluate program success because useful resolutions in one context may not be helpful in another.

As stated before, we have some clues about that through research and in the politics and programs implemented by the administration; normally they base their program designs on evaluations. How to conduct an assessment, which instrument to use and what to measure is one of the biggest issues and discussions in the educational field; even more so in Environmental Education, as what we want to measure is frequently not knowledge (as usual), but attitudes or behaviours. Steverson (2007) goes even further and speaks about the current educational system that contradicts the pedagogical approach that encourages environmental education. He talks about the assessment system. In this sense, he claims that in 'conventional' schooling, they are used to having everything under control and to assessing in a way in which they can explain the questions and answers. On the contrary, environmental education looks for critical thinking and to engage students in problematic inquiries, and this is a 'far more risky endeavour in terms of maintaining order and control' (Steverson, 2007). Consequently, the pedagogical context makes it hard to make an adequate assessment, as Steverson observes. In the study case teachers don't have enough time, and some times expertise to be the responsible of the evaluation and of the analysis of it.

Conclusions

The norms and values identified through the questionnaire in the specific case of the Basque Autonomous Community respond well to the objectives stipulated in the definition of the program. However, there are some weak points to work on especially regarding the direction future work should take. The identified strengths are the engagement of all the stakeholders to whom attention is paid and the comprehensive vision of the program. As weaknesses, the low presence of measurement of change in attitudes or behaviors is identified; the need for a greater presence of students as an agent of change. It is recommended that there should be reflection on the possibility of obtaining feedback from the students' perspective.

It is necessary to strengthen the partnership between researchers and administrations or policy-makers. The improvement and success of these relationships is usually based on there being a good relationship (Agirreazkuenaga, 2019). Perhaps it is necessary to find a way of working for each context-relationship, through local culture with the global cultural picture in mind.

One limitation of this study is the limited case study that focuses on a specific case. However, we consider that it could be enriching to open this up to other contexts. It would be interesting to do comparative research. This method of study opens a window for new research, 'drawing on a diversity of approaches, techniques and traditions is essential to the vibrancy, openness and continuance of environmental education research' (Gough and Reid, 2000). For future research it could be applied to different local contexts, making a comparison of common and differential patterns.

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References

Agirreazkuenaga, L. (2019). Embedding Sustainable Development Goals in Education. Teachers' Perspective about Education for Sustainability in the Basque Autonomous Community. *Sustainability*, *11*(5), 1496.

Aikens, K., McKenzie, M., Vaughter, P. (2016). *Environmental and sustainability education policy research: a systematic review of methodological and thematic trends.* *22*(3), 333–359. https://doi.org/10.1080/13504622.2015.1135418

Akainji, B., Mordi, C., Adisa, T., Ajonbadi, H. (2019). *The Influence of Organisational Culture on Leadership Style in Higher Education Institutions*. Brunel Business School Research Papers. Emerald Publishing Limited

Al Issa, H. E. (2019). Organisational Culture in Public Universities: Empirical Evidence. *Asian Journal of Business and Accounting AJBA*, *12*(1), 41–70.

Alkin, M. C., Vo, A. T. (2017). *Evaluation essentials: From A to Z.* Guilford Publications, NY.

Azofra, M. J. (1999). *Cuestionarios*. Centro de Investigaciones Sociológicas (CIS), 1999. ISBN 84-7476-272-3

Benito Iza, J., Gutierrez Bastida, J. M., Hernandez Abaitua, R., Marañon Zalduondo, J. (2008). *Educar para la sostenibilidad: Guía de la agenda 21 escolar. Education for sustainability; Scho agenda 21 gide*. Servicio Central de Publicaciones del Govierno Vasco. Vitoria/Gasteiz, Spain.

Birdsall, S., France, B. (2018). Lifting the cover: developing an analytical tool to unravel environmental education resources. *Environmental Education Research*, 24 (11): 1546-1564.

Brest, P. (2010). The Power of Theories of Change. *Stanford Social Innovation Review*. Spring 2010. Stanford, CA.

Brundtland, G.H. (1987). *Our Common Future. The United Nations.* New York.

Burhanuddin, B. (2019). The scale of school organizational culture in Indonesia. *International Journal of Educational Management* 33 (7): 1582-1595.

Carleton-Hug, A., Hug, J. W. (2010). Challenges and opportunities for evaluating environmental education programs. *Evaluation and Program Planning*, *33*(2), 159–164.

de Albuquerque Moreira, A.M., Borba Rocha, M. Z. (2018). To Understand the "Brazilian Way" of School Management: How National Culture Influences the Organizational Culture and School Leadership. *Education Sciences* 8 (2), 88.

Dorczak, R. (2013). School Organizational Culture in European Schools from the Perspective of Future School Leaders. In Eds: Chova, L.G., Martinez, A.L., Torres, I.C.., pp: 467-472. *7th International Technology, Education and Development Conference (INTED).* Valencia, Spain.

Edmondson, A. C. (2012). Teaming: How Organizations Learn, Innovate, and Compete in the Knowledge Economy (Harvard Business School). Jossey-Bass, Wiley.

García Ferrando, M., Llopis Goig, R. (2015). La encuesta. In M. Garcia Ferrando, F. Alvira, L. E. Alonso, M. Escobar, *El análisis de la realidad social. Metodos y técnicas de investigación (The analysis of social reality. Methods and techniques of research)* (pp. 331–362). Alianza Editorial.

Gomes, J., Caeiro, S., Amador, F. (2012). Eco-Schools: Development of assessment tools. In Editors F.Gonçalves, J.Fernando, R.Pereira, W.Leal Filho, F.Amador: *Contributions to Sustainability.* Series Environmental Education, Communication and Sustainability, vol. 33 (Chapter 7 , pp.143-162). Publisher: Peter Lang

Gough, S. Reid, A. (2000). Guidelines for reporting and evaluating Qualitative Research: what are the alternatives? *Environmental Education Research*, 6 (1), 20

Ham, S. (2013). *Interpretation: Making a difference on purpose*. Fulcrum publishing, CO, USA.

Hollweg, K. S., Taylor, J. R., Bybee, R. W., Marcinkowski, T. J., Mc Beth, W. C., Zoido, P. (2011). *Developing a Framework for Assessing Environmental Literacy.* North American Association for Environmental Education. Washington, D.C., USA

Kusumaningrum, D.E. 2018. The Principal's Leadership Strategy in Improving Quality: A Study at Aron State Elementary School Pidie Aceh Indonesia. *Book Series: Advances in Social Science Education and Humanities Research,* 269: 42-45. Læssøe, J., Feinstein, N. W., Blum, N. (2013). Environmental education policy research: challenges and ways research might cope with them. *Environmental Education Research*, *19*(2), 231–242.

https://doi.org/10.1080/13504622.2013.778230

MacFadden, A., Williams, K.E. (2020). Teachers as evaluators: Results from a systematic literature review. *Studies in Educational Evaluation,* 64, 100830

Molek-Kozakowska, K., Geisler, R. (2020). De-bureaucratising organisational culture at a public university: A mixed-method study of the implementation of a liberal arts programme. *Higher Education Quarterly*. https://doi.org/ 10.1111/hequ.12262

Monroe, M. C. (2010). Challenges for environmental education evaluation. *Evaluation and Program Planning*, *33*(2), 194–196.

Ozga, J. (2008). Governing Knowledge: research steering and research quality. *European Educational Research Journal*, *7*(3), 261–272.

Peterson, A. (2016). Getting 'What Works' working: building blocks for the integration of experimental and improvement science. *International Journal of Research & Method in Education*, *39*(3), 299–313.

https://doi.org/10.1080/1743727X.2016.1170114

Pizmony-Levy, O. (2011). *Bridging the Global and Local in Understanding Curricula Scripts: The Case of Environmental Education*. *55*(4), 600–633. https://doi.org/10.1086/661632

Rasmussen, K. (2017). The emergence and institutional co-determination of sustainability as a teaching topic in interdisciplinary science teacher education. *Environmental Education Research*, 23 (3): 348-364.

Rickinson, M., Hall, M., Reid, A. (2016). Sustainable schools programmes: what influence on schools and how do we know? *Environmental Education Research*, *22*(3), 360–389. https://doi.org/10.1080/13504622.2015.1077505

Robottom, I., Stevenson, R. B. (2013). Analyses of Environmental Education Discourses and Policies. In R. B. Stevenson, M. Brody, J. Dillon, & A. E. J. Wals, *International Handbook of Research on Environmental Education* (pp. 123–125). Routledge, Taylor & Francis. London, UK.

Schein, E. H. (1983). *Organizational culture and leadership* (Fourth edition 2010, Vol. 2). John Wiley & Sons. New jersey, USA.

Schein, E. H. (1990). Organizational culture. *American Psychologist, 45*(2), 109–119. https://doi.org/10.1037/0003-066X.45.2.109

Schein, E. H. (2009). *The corporate culture survival guide* (Vol. 158). John Wiley & Sons. New jersey, USA.

Sezgin, F. (2010). School Culture as a Predictor of Teachers' Organizational Commitment. *(Egitim ve Bilim)Education and Science, 35* (156): 142-159.

Shaxson, L., Boaz, A. (2020). Understanding policymakers' perspectives on evidence use as a mechanism for improving research-policy relationships. *Environmental Education Research*, 1–7. https://doi.org/10.1080/13504622.2020.1764505

Smith, C. E., Beckmann, J. (2018). *The Role of Organisational Culture in Education District Offices*. Gauteng Department of Education, University of Pretoria.

https://www.academia.edu/38120954/The_Role_of_Organisational_Culture_in_Education_District_Offices

Sotirofski, K. 2014. Organizational Culture Impact on Psychological Empowerment of Academic Staff. *European Journal of Sustainable Development*. 3 (2): 119-124

Stapp, W. B., et al. (1969). The Concept of Environmental Education. *Environmental Education* 1(1): 30-31.

Stern, M. J., Powell, R. B., Hill, D. (2014). Environmental education program evaluation in the new millennium: what do we measure and what have we learned? *Environmental Education Research*, *20*(5), 581–611.

Stevenson, R. B. (2007). *Schooling and environmental education: Contradictions is purpose and practice*. *13(2)*, 139–153.

Szczytko, R., Stevenson, K., Peterson, M.N., Nietfeld , J., Strnad , R.L. (2019). Development and validation of the environmental literacy instrument for adolescents. *Environmental Education Research*, 25 (2): 193-210.Thomas, R. E., Teel, T., Bruyere, B., Laurence, S. (2019). Metrics and outcomes of conservation education: a quarter century of lessons learned. *Environmental Education Research*, *25*(2), 172–192.

Thomson, G., Hoffman, J., Staniforth, S. (2003). *Measuring the success of environmental education programs.* Canadian Parks and Wilderness Society and Sierra Club of Canada. Ottawa, Canada.

Torres, L.L. (2005). Organizational culture in educational context: returning to the school as a challenge in the reconstruction of a theorical model. Cultura organizacional no contexto escolar: o regresso à escola como desafio na reconstrução de um modelo teórico. Ensaio: Avaliação e Políticas Públicas em Educação, 13 (49). Rio de Janeiro. Brazil.

https://www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-40362005000400003

Tilbury, D. (1995). Sustainability Environmental Education for Sustainability: Defining the New Focus of Environmental Education in the 1990s. Environmental Education Research, 1: 195-212.

http://dx.doi.org/10.1080/1350462950010206

van Poeck, K., Lysgaard, J.A., Reid, A. (2018). *Environmental and Sustainability Education Policy: International Trends, Priorities and Challenges.* Monash University. Routledge, UK.

Walker, K. (1997). Challenging Critical Theory in Environmental Education. *Environmental Education Research*, *3*(2), 155–162. https://doi.org/10.1080/1350462970030204

Weiss, C. H. (1995). Nothing as Practical as Good Theory: Exploring Theory-based Evaluation for Comprehensive Community Initiatives for Children and Families. In J. Connell, *New Approaches to Evaluating Community Initiatives: Concepts, Methods, and Contexts* (Aspen Institute). Aspen, CO, USA.

Reduce

HOLISTIC

EQUALITY

AGENDA 21

BALIOAK

NATURA

IRAUNKORTASUNA

IKASTOLA

UPV