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Maragakis, Antonios; van den Dobbelsteen, Andy; Maragakis, A.

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Is Higher Education Economically Unsustainable? An Exploration of Factors that Undermine Sustainability Assessments of Higher Education

Antonios Maragakis

Delft University of Technology, the Netherlands

Andy van den Dobbelsteen

Delft University of Technology, the Netherlands

Alexandros Maragakis

Eastern Michigan University, the United States

Abstract

As students continue to review the sustainability of higher education institutions, there is a growing need to understand the economic returns of degrees as a function of a sustainable institution. This paper reviews a range of international research to summarize the economic drivers of higher education attainment. Although the cost inputs to higher education are fairly well understood, the economic return of a degree is not. Students' misperception of economic returns coupled with a dynamic definition of employability create the framework for unsustainable debt loads for graduates. This paper proposes three metrics that can be used to assess the economic sustainability of students graduating higher education that can be used to supplement the broader definition of sustainability within higher education.

Keywords: sustainable development, higher education, economic return, sustainable education, sustainable assessment

Is the discussion surrounding sustainability within higher education missing a key parameter?

The general topic of sustainability assessment has been exhaustively studied, perhaps better studied than sustainability itself (Kates et al., 2001). With relation to higher education numerous scholars (e.g. Ryan, Tilbury, Corcoran, Abe & Nomura, 2010; Glasser, 2009; Patrick, Murray & Bowles, 2008; Perna, Carriere, Chang, 2006, Salite, 2008) have investigated and analysed the various assessment systems and inventories of university initiatives currently available. Along with individual institution's efforts, there is a growing number of external certifications gaining popularity, such as the Sustainability Tracking, Assessment & Rating System (STARS) and Campus Sustainability

Assessment Framework (CSAF) (Maragakis & Dobbelsteen, 2015). These initiatives show willingness of institutions to become more sustainable, while also providing them with 'sustainability' marketing materials.

As institutions continue their sustainability efforts, there is evidence that suggests that sustainability in higher education is missing a key component sought by students. Maragakis and Dobbelsteen (2013) conducted a survey of sustainability assessment systems within higher education that provided empirical data that identified a gap in current assessment methodologies. The study showed that 92 percent of participants agreed that employability after graduation should be included as a measure of sustainability while the most prominent external assessments currently do not address this aspect (Maragakis & Dobbelsteen, 2013).

The unequivocal concern of students is not a new discovery as other research also supports these numbers (Becker, 1964; Anchor, Fiserova, Mariskova & Urbanek, 2011; WU, 2011; Menon, Pashourtidou, Polycarpou & Pashardes, 2012). It is, however, a fairly novel concept with regards to being identified as a metric for sustainability. This paper looks to review the existing literature regarding the economic returns of higher education and highlight gaps between students' expectations and reality.

Methodology

This research focuses on a literature review assessing relevant economic parameters associated with higher education attainment. The literature available on the economic return of degrees is sizeable and has been well studied over the last decades. The scope of this research is to identify useable information that can be used within the current identified needs and perceptions of sustainability in higher education.

The research presented applies to all forms of higher education, both academic and applied science. The research looks to provide an international view of the subject that specifically addresses trends and realities within higher education after 2010.

One aspect that will not be reviewed in depth is the difference between science, technology, engineering or math (STEM) and non-technical (social science) degrees. The subject of STEM versus social degrees is a very relative topic and one being addressed by governments internationally, such the Ethiopian Ministry of Education's 2008 policy whereby 70% of overall university enrolment is expected to be in a science field, with the remaining 30% in the social sciences (Egne, 2014). Although a very relative topic, these differences are not seen as being the root cause of capturing metrics and, as such, are not part of the scope of this study. This study looks to focus on the underlying expectations associated with the financial incentives of a degree. It is assumed that the correct metrics will be robust and flexible enough that they can be universally used and would automatically adjust for different types of degrees.

Research Questions

The research question underlying the study presented is: Should employability be considered as a parameter of sustainability assessments within higher education?

Outcome of this question will help to answer the main question: Can a set of factors be extrapolated to help guide the creation of a future metric for sustainability assessment of higher education?

Approach

A broad ranging literature review was conducted in order to explore the gaps between students' financial expectations and post graduate metrics. Based on the results of the literature review, the author's expert judgment was used to extract key information from peer reviewed research and used them to propose several new economic metrics for consideration.

In order to discuss this topic with relation to sustainability in higher education, it is first important to baseline the meaning of the term 'sustainable'. The term sustainability is a highly debated word that still remains to be unanimously defined. However, the word sustainable is a more readily accepted word. Based on the World Commission on Environment and Development (1987) definition of 'sustainable development', a development that meets the needs of the present without compromising the needs of future generations, it means to be able to establish and maintain a balance between ecological and economic values, and equity across regions of the world. As Elkington (1997) proposed, the term can be divided into ecological, social and economic factors. Since Elkington, the first two factors have been investigated more extensively than the economic aspect of sustainability within higher education assessments.

To this extent, this research topic is novel and there are limited peer-reviewed studies that directly lend themselves to the sustainability aspects of economics of higher education. Thus, for this research to provide results, it will need to tie in various tangential fields associated with higher education. These include both government and academic lead research and, in some cases, well documented public responses.

Based on this approach there is the potential for promoting bias. This may stem from the amalgamation of various fields and there is a risk of inadvertently combining the literature in a way to support a specific belief. Although this bias cannot be measured this research aims to limit it by including various authors from other fields. It is expected that the varying views of authors and the necessary consensus required to achieve results will help limit any potential bias.

Literature Selection

It should be noted that the general topic of economic returns from higher education has been studied empirically and theoretically since the 1960s and has, arguably, produced tens of thousands of publications that could directly or indirectly support this paper. In order to encompass the most recent trends on this subject, literature selection was limited to peer-reviewed literature conducted post 2010. Literature selection was drawn from international sources to maintain the studies breadth and comprehensiveness. The literature identified to be presented reflects relevant literature that helps provide specific insight as to how to tie in economic parameters into sustainability assessments in higher education.

Review of Literature

Tuition fee

As a general starting point, there is a plethora of public exposure regarding the cost of higher education. Tuition costs are an often-debated topic internationally. From the tuition fees hike riots in the UK (Cammaerts, 2013) to the ‘skyrocketing’ tuition costs in America (State of the Union Address, 2012) higher education is a focal point in media and public policy.

Tuition is a discrete figure that is often the starting point of assessing a higher education institution, but it is also not appropriate as a universal measure of comparison. Tuition is a result of an institutions pricing relative to the economic environment. Economic drivers such as location, the country’s Gross Domestic Product (GDP), median salary, inflation, etc. help shape tuition numbers. Affordability is a term often used to normalize tuition relative to these economic parameters. Countries run their own statistic relative to higher education affordability, which helps guide policy. On a global level, affordability comparison is offered through various venues such as Education Policy Institute, which focuses on providing educational opportunities for all students, and the Higher Education Strategy Associates, which provide higher education decision makers with various metrics and strategic services.

As can be seen through various studies and national strategies, the price of tuition is often a barometer of social health and inclusiveness. Research spans the higher education lifecycle from secondary school through graduation. Cowan (2011) showed that a decrease in tuition also decreases risky health behaviours in youths as it increases their drive for a better future through higher education. Hübner (2012) looked at state-wide differences in Germany and found that a €1000 increase in tuition fees reduced enrolment by 2.7 percent. Hemelt & Marcotte (2011) looked at 4-year public universities in the US and found a \$1000 decrease in tuition increased enrolment by about 2.5 percent. In the US, student debt greatly influences the graduation likelihood of students from the bottom 75 percent of the income distribution (Dwyer, McCloud & Hodson, 2012), while in Ireland, tuition was abolished during the mid-nineties hoping to increase participation from students in low socio-economic status (Denny, 2014).

As research continues internationally, it is unclear if tuition levels are indeed a barrier limiting social equality. This is because there is an underlying expectation that higher education is an investment that will increase a graduate’s future wages. Various studies have generalized higher education attainment as a financially lucrative proposition (Walker & Zhu, 2011; Anchor et al., 2011 and others). Seeing education as an investment means that tuition may not act as a barrier if the returns outweigh the investment. But not all degrees are equal in providing a return on investment.

Employability

There is no doubt that the expansion of higher education has contributed fundamentally to the transformation of society through the development of human competencies (Organisation for Economic Cooperation and Development [OECD], 2011). However, human competencies are not necessarily synonymous with financial gains. Although this has been proposed since the 1960s (Becker, 1964) there is growing literature on the economic outcomes of different degrees. For example, there seems to be international

convergence that social sciences are less favourable for employment (Menon et al., 2012; Schomburg & Teichler, 2011). Tangentially, there is a growing sentiment amongst graduates and post-graduates that a Bachelor's degree is not enough (Schomburg & Teichler, 2011).

Social science degrees, for example, often articulate a 'pie-in-the-sky' proposition that while low initial salaries are to be expected after graduation, the skills students have acquired in undergraduate studies (e.g. critical thinking) will be highly valued by employers over time and result in higher salaries later on during their career (Rajecki & Borden, 2011). However, after investigating salaries across 120 different undergraduate majors, Rajecki and Borden concluded that mid-career salaries are highly correlated with starting salaries, and that the salaries earned by those who completed a degree in social sciences are below average compared to other fields. Therefore, this 'pie-in-the-sky' proposal that value may be seen later may not be an accurate depiction of what future degree holders may expect to experience. It also leads to further discussion as to the importance of employability after graduation.

Although the definition of employability for graduates remains unclear it still persists to be a major motivation for students. The Bologna process in Europe, which aimed to create comparable, compatible and coherent systems of higher education in Europe (European Higher Education Area, 2014) also increases the mobility of high-level skills and labour and contribute to increased employment, productivity and growth (House of Commons Education and Skills Committee, 2007). With regards to students, Maragakis and Dobbelsteen (2013) found 92 percent students agree that employability should be included as a sustainability metric for higher education. This corresponds to academics also calling for employment to be a measure of sustainability (Ashford, Hall & R Ashford, 2012).

Increasing the complexity of measuring employability of graduates are the realities of 'underemployment' and 'overeducation'. Underemployment is defined as those working part-time due to lack of full-time jobs, or those working part-time who would like to work more hours (Bell & Blanchflower, 2011). Underemployment has been a growing concern since the financial crisis of 2008 and remains persistent (Ashford et al., 2012).

Simultaneously, overeducation has been a growing phenomenon in the modern job market. Overeducation is defined as someone whose respective levels of education exceed the requisite levels needed to perform their jobs (Linsley, 2005). The research by Carroll and Tani (2013) points to the growing concern surrounding over education in Australia and throughout the world.

Financial Return

The literature review sheds light on the complexities surrounding the financial parameters surrounding higher education attainment. The commitment required to obtain a higher education degree will always involve some sort of cost to the student, whether it involves time, money and/or a combination of the two.

The literature review generally covers topics that, for the most part, are widely discussed both socially and academically. Tuition prices, financial and social returns of higher education are prevalent in every layer of modern society. However, there seems to be some contradictory information with regard to the economic returns of higher education.

There seems to be stark contradiction in assessing the financial returns of higher education. There are ample sources such as Walker and Zhu (2011), Anchor et al. (2011) and others which show that higher education will lead to greater financial returns. Although the framework of the research is sound, the generalization of the results needs to be questioned. It is clear that the economic returns of a social science are not equal to that of STEM degrees. And even within the STEM degrees there are differences in economic returns depending on the path selected and the educational attainment (Schomburg & Teichler, 2011).

These studies also have not taken into account the modern reality of underemployment and overeducation. Now more than ever it is important for students to understand their opportunities and economic returns after graduation in order to make correct life decisions. It can be inferred that the economic burden of higher education may outweigh the employment returns based on the level of employability of a graduate.

Discussion of the Literature Review with Relation to Sustainability in Higher Education

The literature does not present discrete tools that would allow for financial assessment of higher education within the context of sustainability assessments. In order to make a more accurate forecast of the economic returns of a higher education degree one needs to understand both the inputs and the outputs of the degree.

The inputs for students to make a decision are readily available. A basic calculation utilizing the tuition, duration and miscellaneous costs can easily be obtained to create a realistic projection of the cost of the degree.

The financial outputs of the educational attainment are nebulous at best. Peer reviewed studies exist arguing the general positive economic returns of higher education (Walker & Zhu, 2011; Anchor et al., 2011) while others indicate the inaccuracy of these claims (Rajeci & Borden, 2011; Menon et al., 2012; Schomburg & Teichler, 2011). A proxy to financial return may be the employability of a graduate, but this is far from being a discrete metric considering the complication of measuring underemployment or over education. Not knowing the expected return for an investment, or not being able to correctly forecast it, puts the student in an inopportune framework for making decisions. With regards to how sustainable higher education is, the literature review reveals a clear disconnect between student expectations and results.

These disconnects in the literature shows how students can get themselves into a financial unsustainable situation. Not knowing the returns of a higher education investment may lead to an unsustainable financial burden that may actually worsen an individual's standing. These results also coincide with American student loans which are currently skyrocketing and are unsustainable (State of the Union Address, 2012).

Translation to Metrics for Sustainability Assessment

Based on the research above several key pieces of work have been extrapolated and made into self-containing questions. These questions look to provide a framework for integrating discrete economic metrics regarding with regards to the sustainability of a higher education degree.

Question 1: What is the average yearly salary of graduates with that specific degree within 12 months of graduation?

This question stems from the strong correlation that Rajecki and Borden (2011) identified between mid-career salaries and starting salaries. Rajecki and Borden (2011) also noted a notable difference between fields of studies so the question asks for the results of that specific degree to allow direct student comparison. A 12-month window is allowed so as to capture a suitable period of time after graduation.

Question 2: What is the ratio of full time / part time employed graduates with that specific degree within 12 months of graduation?

Underemployment is defined as those working part-time due to lack of full-time jobs, or those working part-time who would like to work more hours (Bell & Blanchflower, 2011). Since underemployment has been a growing concern since the financial crisis of 2008 and remains persistent (Ashford et al., 2012) this question looks to provide students with a more meaningful number than just 'employability'. A 12-month window is allowed so as to capture a suitable period of time after graduation.

Question 3: What percent of graduates with that specific degree are employed in a position whose level of education exceeds the requisite levels needed to perform their job?

The research by Carroll and Tani (2013) points to the growing concern surrounding over education and this question uses Linsley (2005) definition to capture the level of over education experienced by a graduate of a specific degree within the market place.

Conclusions and Discussions

Interpretation of Results

From its inception, the OECD has stressed the importance of human competencies for economic and social development (2011). This, in general, can be translated as a growth of an individual in a personal and/or professional context. This guidance could also be inferred to as general guidance for sustainability assessments in higher education.

Thus for a degree to be assessed as sustainable in the economic context there needs to be at least two discrete elements presented to students for their economic decision making. The first is the cost of the education. This is a relatively straightforward calculation in which the parameters are readily available (tuition, opportunity costs, etc.).

The second element is the financial return of investment from the degree. This element presents the students with the varying monetary returns from different types of degrees and institutions. This would allow the student to decide on which institution to enrol in and the type of degree they would like to pursue based on their needs to develop their personal competencies. This should also be incorporated in sustainability assessments of higher education institutions.

The concepts presented in this paper are not new. In fact, the economic returns of degrees have been well studied in both an empirical and theoretical framework since the 1960's. However well studied these concepts are it is interesting that they still remain out of sustainability assessment of higher education institutions. Sustainability assessment, it seems, have actively avoided this topic as they focus on an academic institutions ability to develop human competencies, knowledge and innovation. However, as Ilisko & Badoyanova (2014) highlighted, many heads of schools stated that "Schools should prepare the student for the requirements of a job market and to encourage them to live with a responsibility in everyday situations and in harmony with the environment."

Makrakis & Makrakis (2012) data showed that when addressing Sterling (2001) four-type typology of the roles and function of university (between socialization, liberal, vocational and transformative) 21% of students placed a focus on vocational training while 42% place an emphasis on the transformative function, which sees a university as an agent of change towards a fairer society and a better world. Considering the growing student debt burden, the university is not acting as an agent of change towards a fairer society. Including economic metrics would not only directly address the expectations of 21% of students that supported vocational training but also would support the transformative function by securing an economically sustainable graduate.

Based on the literature presented in this paper, it seems that sustainability assessments not including economic returns are missing a key parameter that may be contributing to the current unbalanced system.

Discussion of Method Used for Comparison

The research presented spans multiple fields in an attempt to capture a holistic review of current academic thought on the economic parameters surrounding the decision making of students that could be applied to sustainability assessments. The review covered qualitative and quantitative research and, in many cases, found potential contradictions, which made comparison of the research challenging. These challenges provide two valuable insights that may benefit future research.

The first insight is that apparent contradictions mainly stem from different points of views. For example, a broad analysis of higher education attainment may indeed find an increased rate of return while a more focused study may reveal a positive return for STEM fields and a negative return for social sciences. This means that the data needs to be carefully reviewed as it is not necessarily contradictory but rather biased towards a specific point of view. This makes the application into a sustainability assessment even more difficult as there will need to be some assumptions made by the assessment which may not necessarily achieve the desired results.

The other insight is that there is not yet a complete research surrounding the economic lifecycle of modern higher education. There is a general framework of understanding the inputs that go into accomplishing a degree, but the outputs are not discretely understood so as to provide guidance for sustainability assessments. Even some general metrics of post-graduate metrics may be incomplete or obsolete due to the changing market place and the drivers of employment that continuously affect the return of investment of a degree.

The research is subject to weakness as the amalgamation of all these topics can create distortion of facts. The economic inputs and outputs of higher education has produced a wealth of knowledge over the last several decades and the proper guidance needed for sustainability assessments may not be identified without the engagement of subject matter experts. Interpretations may lead to false assumptions which would increase omissions and limit critical review.

This weakness also led this research to set a very prescriptive description within the questions. Each question specified the results based upon the specific degree. This level of granularity is lacking from this literature reviewed but provides a clear assumption that aims to students making decisions as to which higher education path to follow.

Recommendations

This study has highlighted the importance of understanding the economic returns of higher education within the framework of sustainability assessment. A degree should not be marketed as sustainable unless it addresses the economic return of the future graduate. In order to do this, further research should be undertaken to address some general parameters to help students in decision making.

One of the critical pieces of this research was to propose a framework for assessing an institutions ability to provide a degree that is economically sustainable within the framework of current student demands and sustainability assessments. This is a novel discussion in the context of sustainability assessments of higher education institutions, although not so novel in the general discussion of economic returns from higher education.

The research identified that economic returns must be more granular than just the institution; the metrics need to address the performance of the specific degree within the institution in order to provide a clear message to the students. This level of granulator would provide a robust method for assessing cross institutional performance of similar degrees.

With this in mind, further research needs to identify what are the most appropriate aspects to be measured as an economic output of a higher education degree within sustainability assessments. Traditional models that address rate of employability after graduation are not comprehensive enough. A framework should be researched that is robust and flexible enough to help students both now and in the future while keeping in mind that this is applying to the assessment of sustainability of an institution.

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Correspondence regarding this paper should be addressed to: Antonios Maragakis, Antonios Maragakis, Delft University of Technology, Faculty of Architecture and the Built Environment, Department of Architectural Engineering + Technology, P.O. Box 5043, 2600 GA Delft, The Netherlands, antonios.maragakis@gmail.com.

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Culturally Responsive Dispositions in Prospective Mathematics Teachers

Desha L. Williams

Kennesaw State University, the United States

Belinda Edwards

Kennesaw State University, the United States

Karen A. Kuhel

Kennesaw State University

Woong Lim

University of New Mexico, the United States

Abstract

Sustaining teachers in culturally and linguistically diverse schools has been a prominent issue for years. This qualitative study focused on the impact of an enhanced preparation program on the cultural dispositions of five pre-service mathematics teachers. It is postulated that if positive cultural dispositions are developed in teacher candidates, the possibility of them remaining in cultural school settings is likely. Themes emerged demonstrating that the enhanced program heightened the participants' awareness of cultural and linguistic differences, as well as, their commitment to impacting academic achievement. Of the five participants, four teach in a culturally and linguistically school after five years in the profession, demonstrating sustainability after participating in the enhanced program.

Keywords: teacher preparation, teacher sustainability, teacher retention, cultural dispositions, mathematics teacher preparation

In many culturally and linguistically diverse (CLD) school settings, teachers' retention and attrition is at an all-time high (Ingersoll, Merrill & Stuckey, 2014; National Center for Education Statistics [NCES], 2016). The lack of teacher retention may have a negative impact of student achievement and learning efficacy (Gershenson, Holt, & Papageorge, 2016). Students are left with feelings of abandonment, impacting their academic potential (Martin, 2009). Creating a sustainable workforce prepared to teach CLD students is paramount, particularly in the STEM fields. The number of CLD diverse students pursuing STEM fields at colleges and universities fall extremely short when compared to their White counterparts (Nation Assessment of Educational Progress [NAEP], 2015).

In preparing teachers for sustained employment in CLD schools, preparation programs must prepare them to be attentive to the needs of *all* students and create equitable, inclusive, and supportive environments, which include communicating high expectations for academic achievement.

Critical to becoming an effective mathematics teacher for diverse learners is a combination of content knowledge, dispositions, and pedagogical knowledge that will support students' mathematical thinking and learning as well as their home culture and funds of knowledge (Gay, 2000, Lucas, Villegas & Freedson-Gonzalez, 2008). However, prospective teachers are underprepared to teach mathematics effectively in diverse classrooms (Garcia, Arias, Harris Murri, & Serna, 2010; Jenks, Lee, & Kanpol, 2001). Teacher preparation programs have been found to be effective in ensuring prospective teachers are equipped with appropriate mathematical content knowledge and general pedagogical strategies. However, research suggests that teacher preparation programs have done little to prepare teachers to work with CLD children (Arias & Poynor, 2001; Darling-Hammond & Bransford, 2007; Garcia, et al., 2010; Jenks, et al., 2001). Studies have been published indicating that teachers are not adequately prepared to teach CLD students and have little knowledge of culturally responsive teaching (CRT) and learning strategies (Blanchett, 2006; Jones & Fuller, 2003; Lucas & Villegas, 2007). Hayes and Juárez (2012) claimed that White racial domination still occurs in teacher education and this impedes the preparation of teachers for CRT. Similarly, studies of prospective teachers' cultural awareness have found that prospective teachers in both North America (Larke, 1990) and Hong Kong (Yeung, 2006) report feelings of discomfort when working with students from CLD backgrounds.

Gay (2000) cited a disparity between theory and practice, suggesting that teachers can indeed have the disposition to teach *to* diversity; however, dispositions of the teachers quite often do not align with the theories supporting CRT. In light of the need to examine prospective teachers' ways to integrate theory and practice of CRT, we note that the current literature regarding the dispositions of prospective teachers is limited (Edwards, 2011). Extending the line of work regarding the dispositional issues of cultural responsiveness (Edwards, 2011), this case study aimed to consider the dispositions related to developing culturally responsive mathematics teachers. Findings from the study can add to the knowledge base with regard to how cultural dispositions impact the teaching and learning environment. The research question that guided this study was: To what extent does a program, designed to prepare teachers to effectively teach CLD students, impact the cultural dispositions of prospective mathematics teachers? It is the authors' views that teachers who possess positive cultural dispositions will have the necessary dispositions to impact student learning and be sustained in CLD school settings (Banks & Banks, 2009).

Theoretical Framework

There have been numerous ways to conceptualize the characteristics of an effective classroom teacher, including how teachers develop those characteristics. Dewey (1933) found that effective teachers are open-minded, act responsibly, and take initiatives in creating engaging lessons. Later, Haberman (1995) claimed that effective urban teachers seek resources to meet the diverse needs of their students and are persistent and inventive in engaging students who may be resistant to academic engagement. Additionally, effec-

tive teachers are reflective in an effort to improve practice and draw upon student-teacher relationships to create relevant lessons.

In order to make sense of these ideas on a spectrum, we incorporated the theory of the functioning of teacher dispositions and the role of teacher education in developing awareness (Stooksberry, Schussler, & Bercaw, 2009) with Dewey's and Haberman's views of the characteristics of effective teachers. Teacher candidates enter a teacher preparation program with a variety of life experiences and socializations in schools (Kabadayi, 2015). The theory of the functioning of teacher dispositions and the role of teacher education (Stooksberry, Schussler, & Bercaw, 2009) postulates that the teacher education program provides an awareness that either challenges or supports the candidates' assumptions, inclinations, and dispositions, and that candidates ultimately emerge with various behaviors and thinking (see Figure 1). Examining the characteristics presented by Dewey and Haberman within the data through the lens of the theory of the functioning of teacher dispositions, along with the role of teacher education, provides a mosaic theoretical framework that takes into account the underlying qualities of effective teachers while recognizing the uniqueness of the urban environment, where many CLD learners reside. This enables the examination of developing dispositions of prospective teachers who are engaged in a teacher preparation program but do not actually have their own classroom to transform their dispositions into action.

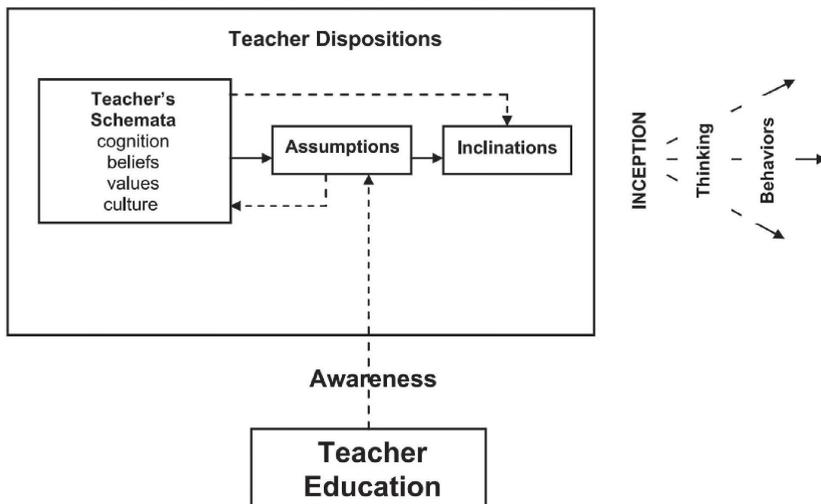


Figure 1. The Development of Teacher Dispositions and the Role of Teacher Education in Promoting Awareness (adapted from Stooksberry, Schussler, & Bercaw, 2009, p. 722).

Relevant Literature

This study examined the changes in dispositions of prospective teachers, in particular those who have made the conscious decision to teach CLD learners. We reviewed the research regarding teachers' dispositions, affective experiences for meaningful change, affective issues with mathematics, and dispositions toward cultural diversity among prospective mathematics teachers.

Cultural Dispositions

Cultural dispositions are “teachers’ inclination to meet the needs of the diverse learners in the classroom” (Schussler, Bercaw, & Stooksberry, 2008b, 107). There is evidence that cultural dispositions play a significant role in ensuring that teacher culture and student culture co-construct opportunities for learning (Banks, Cochran-Smith, Richert, Zeichner, LePage, & McDonald, 2005; Schussler, et al., 2008; Splitter, 2010; Gerretson, Iliško, & Fortino, 2010). However, in reality, teachers often enter school or classroom environments where the culture of their students does not align with their own and, in some cases, this can lead to a learning environment that lacks inclusiveness and relevance, and hinders students’ participation in classroom activities (Hertzog, 2005).

Affective Attributes

Teacher candidates should reflect on their thinking and actions to develop an awareness of their dispositions, we believe affective experiences have the potential to foster the development of appropriate dispositions. Research suggests that affective views could be stored in episodic memory, rooted within one’s personal experiences, thus not allowing to access one’s affective qualities through questioning or logical analysis (Nespor, 1987). This gives more credence to the view that a thoughtful and purposeful approach to developing affective responses is necessary; and Harrison (2008) called for more research about ways to develop affective qualities in higher education. Grootenboer (2010) suggested that students be placed in a field experience with the intent to increase opportunities for authentic experiences unlike content learning in lecture halls on campus, and that the professional programs provide learning experiences carefully designed to develop affective attributes as important part of components in the coursework.

Affective Issues with Mathematics

Mathematics has not produced the same amount of research in affective issues as some other disciplines, such as social science, language, and literature studies (Allchin, 1999; Aplin & Saunders, 1996; Lee & Cockman, 1995). Even though mathematics has been viewed as a value-free and culture-free discipline (Bishop, FitzSimons, Seah & Clarkson, 1999), researchers (e.g., Bishop, 1998; D’Ambrosio, 2001) have found that culture plays a pivotal role in the teaching and learning of mathematics. Grootenboer (2010) claims that the rich tradition of beliefs and values about mathematics teaching and learning should be examined. The underlying dispositions towards mathematics and the professional practice of teaching should be part of active field research in order to attend to pedagogical approaches that develop students’ affective qualities.

Dispositions Toward Cultural Diversity

Giles & Sherman (1982) defined cultural diversity as related to the ways people perceive differences in skin color, language use, and socioeconomic status from the middle-class Anglos. Dee and Henkin (2002) reported that educator’s attitudes towards pluralism and diversity could be understood in a more systematic way. For example, Dee and Henkin found that some educators are more likely to include diversity in content,

value equity in the classroom, and feel comfortable interacting with those with different cultural backgrounds. Those educators recognize diversity as positive for society and understand how assimilation to the mainstream culture contributes to people's success in society.

The field has recognized that knowledge of students is a critical component of teacher knowledge (Shulman, 1987); however, teachers are not adequately prepared to teach students with diverse backgrounds (National Center for Education Statistics, 1999). Multiple studies reported that teachers have cultural lenses that are significantly different from those of racial and ethnic minority students (Gillette & Boyle-Baise, 1995; Paige, 1993; Rios, 1996). Irvine (1990) argued that such a gap between the teacher and minority students could produce a variety of negative results such as inappropriate remediation, harsh discipline, and attributing minority students' academic and classroom behaviors to their home environment.

Over time, there has been a growing body of literature that supports the view that teacher education should facilitate pre-service teachers' learning to explore beyond the familiar boundaries of cultural norms and to overcome ambiguities and psychological risks associated with cultural dispositions. For example, one study (Villegas, 2007) reports a case in which a teacher preparation program facilitated pre-service teachers' learning so that they become aware how they respond in the classroom to CLD children. Bennett (2008) examined pre-service secondary teacher development for teaching students who live in economically disadvantaged situations. The results found that after participating in a driving tour, reading literature, and writing a reflection paper the participants developed (a) an awareness of socioeconomic differences, (b) empathetic rapport and caring attitudes, and (c) a commitment to CRT. So will the immersion in a variety of cultural, linguistics, and content experiences have an increased impact?

Methodology

The participants of this study were enrolled in a traditional Master's of Arts in Teaching degree program at a large state university with specific field placements in CLD schools. Additionally, participants attended monthly seminars and professional conferences that focused on various aspects of teaching in CLD schools.

Five students participated in this qualitative case study. The study of Danielle, Amber, Linda, Erin, and Janice is bounded by the preparation program and being recipients of a scholarship that focused on preparing teachers for CLD student populations (Merriam, 2001). The participants were Caucasian women ranging in ages from 24 to over 50. Danielle, Amber, Erin, and Janice are career changers. Linda began the program directly upon completion of her undergraduate degree.

The Experiences

The participants attended five workshops, each with a unique focus. The first workshop focused on teaching mathematics for ELs. The participants read literature on the subject prior to the workshop. Strategies along with potential challenges were shared in the two-hour workshop. The second workshop gave the participants the opportunity to interact with veteran teachers of ethnically and economically diverse students. The veteran teachers shared their experiences with race, culture, or gender in classrooms,

schools, and communities, and answered questions. The third workshop placed participants in a simulation in which some experienced being in a position of power and privilege while others in a marginalized position. The participants also read literature on the use of the tenets of social justice in mathematics instructions. The fourth workshop gave participants a glimpse into the lives of students who are homeless, the impact of homelessness on schooling, and legislation protect students who are homeless. The final workshop demonstrated various pedagogical strategies to meet the needs of various learners including the effective use of manipulatives in secondary mathematics classrooms and provided presentation on research-based practice to create differentiated environments.

In addition to the workshops, participants attended two of three conferences. All of the participants attended a regional conference with other mathematics and science scholars. This conference gave participants an opportunity to network with peers and other education professionals. Participants chose to either attend the state's mathematics conference or attend a state-level EL conference. The state mathematics conference was a two-day conference of concurrent sessions on various topics of pedagogies and other issues impacting mathematics and mathematics education in the state. The EL conference was similar except the focus is on the pedagogies of effective lessons for teaching ELs.

Methods of Data Collection and Analysis

Multiple sources of data were used to allow for triangulation of findings. Data sources were entry and exit interviews, and five workshop questionnaires. Data were collected over a period of 4 semesters. Entry interviews were used to gather baseline data regarding participants' dispositions for working with diverse populations, their openness to providing rigorous, equitable mathematics opportunities for ALL students. An example question is, "Standardized test scores of some ethnically and linguistically diverse student groups have fallen short. Provide one reason you believe this is occurring and can you offer a possible solution." Another example is, "Do you believe today's schools are equitable? If not, provide an example of how are they not equitable. If they are equitable, why do you believe this?" Each of the workshop questionnaires focused on the workshop's topic. The questionnaires were designed to gather insight on participants' views before and after the workshop. An example of a workshop question is, "Is there a difference in teaching students who are economically disadvantaged than those who are not?" Another example is "Should teachers use pedagogies of teaching for social justice in mathematics instruction? Why or why not?" A follow-up questions examined how the participates would describe a lesson from a social justice perspective. In exit interviews, similar questions explored in the entry interview and in questionnaires throughout the program were revisited. This was done to determine if participants' dispositions in these areas had remained or were altered in any way.

Data were examined at various stages (beginning, middle, and end) of the program and reexamined collectively using open and axial coding (Strauss & Corbin, 1990). During the open coding stage of analysis, researchers carefully read, each response to the entry and exit interview questions, as well as, the workshop questionnaire responses. Our goal was to discover and categorize the data into specific ideas, concepts, and topics of discussion that were related to the research question and other related viewpoints. Each researcher independently coded the data, assisting with reliability of the data. A

team meeting was held to compare and develop a unified coding scheme. We examined participants' knowledge prior to participating in various seminars and workshops and how that knowledge shaped their dispositions, paying particular attention to their awareness of cultural factors, including their openness and dispositions towards students' culture in regards to teaching and learning. In summary, our analysis of data revealed three important components related to participants' dispositions prior to entering, during, and at completion of the program.

Findings

The findings are presented in three components: Dispositions upon entrance into the program, during program, and at the completion of the program.

Dispositions Upon Entrance Into the Program

Two themes emerged in the analysis of the data upon entrance into the program: equity awareness and deficit awareness. *Equity Awareness* is defined as a desire for equity, recognition of inequitable practices, a desire to advocate for students, and the optimism in accomplishing their advocacy efforts. *Deficit Awareness* is described as critiquing the act of placing blame for failure in school on the child and/or family.

All participants were aware of equity differences in school for various reasons. Amber noted that the quality of education varies depending upon school location, "Good schooling depends on where you live. Best teachers go to school with better kids." Danielle realized that tests were culture biased, "Test should not be design for the culture we are." Amber noted that if the culture of a school was not responsive to the needs of CLD students that a teacher may have to stand up for that child, "If [the decision] was extreme, I would fight for [the student]."

With regard to deficit awareness, the data were more complex. While all participants indicated that deficit thinking about students was negative in their entrance interviews, the way they represented this thinking was on a continuum. For example, Janice and Linda focused on differences about students from minority heritages or lower socio-economic backgrounds. "Students' backgrounds are the reason for shortcomings in achievement testing for minority students" (Janice). "Kids become self-fulfilling prophecy [in regards to why they struggle]" (Linda). Erin talked about how teachers do not make an impact in academic learning, "Teachers don't differentiate enough. They need to change activities and help students want to learn math."

Dispositions During Program

Data collected from questionnaires completed after each of the five workshops generated four themes: In it for the Students, Cultural/Linguistic Responsiveness, Recognition of Areas of Improvement, and Awareness of Differences. Participants showed evidence of empathy, adaption, culturally responsive support for students, a desire to be advocates, and an understanding of the importance of communication. Comments demonstrated participants' passion for serving CLD students.

In it for the students. Participants showed a desire to make a difference in the lives of CLD students. They realized that they had responsibilities as teachers that went

beyond teaching mathematics. Amber spoke of being aware of school culture and being willing to reach out for assistance, “Be aware of behavior and conditions at school. Be prepared to help [students] and seek help from others [teachers] when appropriate.” Erin stated that she could only control her own classroom environment, “Provide security for students inside my classroom and offer to let them stay after school while I’m working.” Janice noted that she had learned the importance of communication, “Keep parent contact and communication open.” Amber expressed a dilemma and a need to know more about how to be an advocate, “How can I advocate for [homeless students] without making them feel embarrassed about their situation.”

Cultural/linguistic responsiveness. Participants understood the need to teach in a culturally and linguistically responsive manner. Linda stated, “Understand the background of my students in order to create culturally relevant math problems.” Janice said, “To empower our students, they need to see how math can help our students against social justice issues. I want my students to be successful citizens of the world.” Danielle wondered how she could help students see beyond their current context. “How do I get students to realize the importance of being life-long learners?”

Recognition of areas of improvement. There was an overall recognition by participants of being at the beginning of their journey as teachers of CLD learners. “I feel like I could use more exposure in this [economically disadvantaged] area...If I was placed in an inner city low-income majority students, I would probably feel overwhelmed” (Janice). “I need to learn activities [for ELs]” (Danielle). “Let go of pet peeves [to focus on student learning]” (Linda). “I feel that I could use more exposure and knowledge about different cultures. I feel more comfortable with certain ethnic students – Black, Hispanic – than maybe others” (Janice).

Awareness of differences. Participants understood that differences impacted the lives of their students and their lives as teachers. Danielle questioned decisions that she made, “As a White woman, who has a totally different concept of necessities, why should I judge? Do I have the right to judge?” Linda reflected on the need to keep the privacy of homeless students in her classroom, “I need to make myself aware of [the impact of homelessness on schooling] as soon as possible and immediately work to keep homeless information secret from other students in my classroom.” Janice considered the need to make learning relevant to her students’ lives, “Differences in how and what can be used in the classroom with things that are applicable to their lives”.

Dispositions at the Completion of the Program

Three themes emerged at the completion of the program: Cultural/Linguistic Responsiveness, Discovering Differences, and Interpersonal Awareness. Additionally, each theme was analyzed to produce sub-themes.

Cultural/linguistic responsiveness. Participants exhibited positive change in their understanding of culture and how cultural responsiveness impacts teaching and learning. In particular, participant responses indicated two main sub-themes: *high expectations and connections*.

High expectations. Erin noted that it is important to, “get everybody on a common group to build them up, and to have them excel, beyond what’s required of them to help them meet expectations.” Linda reflected on the fact that she may not have assumed high expectations for all students when she entered the program, “I’ve used what I’ve

learned from the workshops to rethink my expectations and to differentiate instruction.” Danielle expressed surprise that her students only saw one path to college and that was through the military.

I have so many students who are seniors this year and [they say], “I have to go into the military because that’s the only way I can pay for college.” I’m like, oh my gosh, there’s so much money out there for you. I’ll help you investigate.

Connections. Participants realized the importance of making connections with their students. Erin noted that, “[I] modify and differentiate my lesson in ways that will not only allow me to increase their learning potential.” Amber found that:

I do a lot of getting to know my students, their personalities, their interests, their backgrounds, and their ability level both mathematically and with language. I use that information to modify and differentiate my lessons in ways that will not only allow me to increase their learning potential, but keep theirs.

In the final semester of the program, Amber had English learners (EL) in her classroom. Here is how she made connections with her students who did not want to speak English in class.

I think a lot of it comes from the insecurity to speak English, ‘well I am not going to speak a language because that’s not what I am, I am Hispanic so I am going to speak Spanish’ so I said ‘okay so you can’t do both.’ ... okay math is the primary language that I am here to speak or to teach, maybe [teaching] language will be the secondary aspects. So ever since I start letting it be more of bilingual kind of atmosphere. It has been more relax.

Linda noted that teachers who are different from the children they teach need to reach out to better understand their students.

Statistics show that most of the teachers that come in [to teach in a Title I school] don’t come from that kind of environment so there is a certain disconnection, so they don’t really understand where those kids are really coming from, they don’t understand how to connect with them, so that makes it even harder.

Discovering differences. Participants noted differences in two areas: *cultural and linguistic differences and differences in societal influences.*

Cultural and linguistic differences. Participants became aware of the impact of differences in home culture and how these differences can impact the schooling environment. Erin noted that,

A lot of factors go into why students perform the way they do. I had a lot of students sleep in class or look tired...it opened my eyes to what students go through and how it impacts them in school. If a lot of things are going on at home, it’s hard for them to focus in school.

Danielle discovered that, “The hardest thing for me to realize is they’re [English learners] not being disrespectful. They’re not being rude it’s just who they are.”

Linguistics was another area where participants noted differences. As shown in an earlier quote, Amber realized that English learners were not going to automatically speak English in her class and that she had to come to terms with the situation. Amber also noted that she learned, "Some days, they [English learners] get fatigue really quickly dealing with all the language."

Differences in societal influences. Danielle noted the differences between her son's high school education and that of her students at the Title I school where she teaches,

... as a new teacher I try not to judge anything. So when teachers tell me they don't have support at home, I am not going to believe it until I know it to be true. All I know is that my son goes to a high school [in an affluent area, and they recommend that he [gets extra support outside of school], I didn't get a choice. I knew that my son has to have [that] or he would not be able to keep up in the classroom. Here there is no way you can ask students/parents to provide that and [my Title I high school] doesn't have the resource to provide that for them.

Interpersonal awareness. Interpersonal awareness focused on three sub-areas: *reflective, responsibility, and equity.*

Reflective. Danielle found that her students are teaching her in a variety of ways, "They are teaching me to be patient, to be kind, to be generous." She also found that she "...needs to be more cognoscente of vocabulary, and not just because of another language, but there is teenager language."

Responsibility. Responsibility was part of each participant's interpersonal awareness. Danielle realized that she needed to make connections, but it took a lot of time. "Oh I'm going to have to find a way you make that connect. And I just do research, it's a lot of work (laugh). Yeah it's a lot of work." Linda came to realize that it is her responsibility to differentiate instruction. "A strong EL...he still wasn't doing well on test. What I mean is this kid knows calculus in the eighth grade. He was doing integrals on the board. I said, 'Obviously I have to make this accessible to him'." Janice also came to the conclusion that she had to change her method of teaching for English learners. "my method to my goals changes...different ways to teach diverse students...use of manipulatives and visual aids, doing word walls and concentrating on vocabulary..." Additionally with regard to differentiation, Amber stated, "I try to make it [lesson] into a game whenever possible... [the mathematics] stays with them longer and it gives them something to reference".

Equity. As with success, equity is difficult to tease out because it is embedded in many of the quotes already used as evidence. But it was evident that all participants agreed with the statement that all children can be successful in school with the right kind of assistance.

Discussion and Conclusion

The purpose of this study was to examine to what extent does a program, designed to prepare teachers to effectively teach cultural and linguistically diverse students, impact the cultural dispositions of prospective mathematics teachers. Understanding how a specialized program can impact cultural dispositions of pre-service teachers may provide a starting point for increasing sustainability in CLD schools. Overall, our findings were

similar to that of Bennett (2008) regarding teaching learners from lower socio-economic backgrounds. Findings indicated that critical teaching experiences in teacher education impacted prospective teachers' dispositions towards teaching CLD learners. Monthly seminars and professional conferences focused on cultural responsiveness, teaching for social justice, teaching students who are homeless, mathematical differentiation, and teaching mathematics to English learners positively impacted the participants' cultural dispositions and diversity and interpersonal awareness. Furthermore, the field experience played an integral role in the participants' development of cultural dispositions. It provided opportunities for the participants to make connections with their students that led to differentiation, and culturally responsive lessons.

Our findings also indicate that pre-service teachers whose cultural dispositions are developed tend to embrace diversity and are reflective in their practice as it relates to creating a learning environment that is equitable. According to Schussler, et al. (2008a), teachers who have the inclination to reflect on cultural norms and those of their students tend to address the needs of their students. This supports the need to produce effective mathematics teachers for CLD learners by preparing prospective teachers who have dispositions that support students' mathematical thinking and learning as well as their home culture and funds of knowledge (Gay, 2000).

Some critics say examining pre-service teachers' dispositions may "detract from the real work of giving teachers-to-be the knowledge and skills needed to teach their future students" (Villegas, 2007, p 370). However, beliefs and dispositions impact actions (Schussler, et al., 2008; Splitter, 2010). As sustainability demands transformation, a new paradigm of thinking and acting promotes "a catalytic change for sustainability" where teachers are aware of their beliefs and practices (El-Deghaidy, 2012, p. 25). This study illustrates a case in which prospective teachers who demonstrate appropriate dispositions have decided to integrate theory into their practice. For example, the entrance interviews indicated participants exhibited initial acuity towards cultural dispositions and had a genuine desire to teach in a CLD school environment. Figure 2 provides a visual representation of our findings. Participants entered the program with experiences, preconceived notions and other environmental inputs. They also entered with an awareness of differences in themselves and the students they would be serving, an awareness of "the other". As we engaged participants in various literatures, workshops and conferences, they had an increased awareness of their own differences and the power they had to impact change for their diverse students.



Figure 2. Visual Representation of Findings

The results of this study will benefit those engaged in teacher education. It will provide a venue for further discussions on the importance of integrating the development of culturally responsive pedagogy and dispositions into the teacher's professional practice and fostering teacher education for sustainability (Strode, 2015). It is well documented that cultural relevance and responsiveness makes a difference (Ladson-Billings, 1994; Gay, 2000) and cultural dispositions are effective tools for sustainable development (Salomäki, Ruokonen, & Ruismäki, 2012). Preparing teachers who are culturally competent assists in ensuring that all students reach their full potential academically (Aceves, & Orosco, 2014).

With regard specifically to the teaching of mathematics, culturally competent teachers have the dispositions, knowledge, and skills to support sustainable development by creating a mathematics learning environment where teacher planning and instructional practice draw on the diverse knowledge and experiences of the learners. This practice ensures cultural and linguistic inclusion, fosters pride among learners in their own cultural heritage, and improves academic learning (McKeown, 2011). When creating this type of mathematics learning environment, a culturally competent teacher understands that there are multiple perspectives on mathematical knowledge and challenges learners to think critically about these varying perspectives in order to address local and global issues (McKeown, 2013). Linguistic and cultural dispositions play an important role in sustainable development. If linguistically and culturally diverse students are to gain the confidence and skills they will need to move forward to a more advanced study of mathematics and throughout their lives, mathematics teachers must have the cultural dispositions that supports a high quality education for students from CLD backgrounds, while promoting and preserving their cultural heritage.

At the submission of this manuscript, four of the five participants are working in CLD settings, of which one teaches sheltered EL mathematics. These participants have taught in diverse environments for five years, thus demonstrating sustainability. The fifth participant has left the profession, stating lack of support from administration. She taught in a school that did not have a varied cultural or linguistics student population. As a result of the current status of our participants' sustainability, we recommend future research to examine how these cultural dispositions are reflected in practice.

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Correspondence concerning this article should be addressed to Desha Williams, Department of Secondary & Middle Grades Education, Kennesaw State University, 580 Parliament Garden Way, MD 0122, Kennesaw, GA 30411. Email: dwill178@kennesaw.edu; 470-578-2505.

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Delving Into Key Dimensions of ESD Through Analyses of a Middle School Science Textbook

Elvan Sahin

Middle East Technical University, Turkey

Abstract

Uncertainties and debates regarding the term of sustainable development are still going on, and similarly, the notion of education for sustainable development (ESD) is open to debate. There has been an attempt to make the concept of ESD evident, which is quite challenging. Palmer (1998) stated the appropriateness of ESD within environmental education and presented ESD as a new trend for teaching and learning about the environment. In line with these interpretation, Sauvé (2002) pointed out that ESD seems to emerge as a current issue within environmental education. Contrary to these claims, some researchers do not interpret ESD as an evolution within environmental education. According to Sterling (2001), ESD can be recognized as sustainable education in which there is a movement toward the renewal of education systems and institutions ‘doing better things’ and ‘seeing things differently’. Apart from those qualitatively different interpretations of ESD, in 1998 the Council for Environmental Education published a strategy report (CEE, 1998) which is particularly significant for teachers. This report specified seven key dimensions regarding ESD, namely: interdependence; citizenship and stewardship; needs and rights of future generations; diversity; quality of life, equity and justice; sustainable change; and uncertainty and precaution in action. This study could provide an analysis of Turkish middle school science textbooks with respect to these key dimensions on ESD. Current evidences showed that these textbooks do not refer to the dimensions of sustainable development sufficiently.

Keywords: education for sustainable development, middle school science education, sustainable use of natural resources

The Vision of Sustainable Development

We have utilized human-centric approaches to understand our value, our place and role within the biological systems. Such an approach overemphasizing humanbeings has brought about depletion of natural resources, damage to natural environment and created a challenging issue to the long-term sustainability of our planet, the earth (Tillmanns, Holland, Lorenzi, and McDonagh, 2014).

The concept of sustainability was first introduced by a Western environmentalist in the World Council of Churches in 1974 (World Council of Churches, 1974). It was emerged as a result of feelings of concern toward the environment when human beings

in many parts of the world suffer from extreme poverty, lack of fresh water, or discrimination. Sustainability accompanied by sustainable development became a central issue when the United Nations' World Commission on Environment and Development published its report called *Our Common Future* (World Commission on Environment and Development, 1987). The key point behind this report that was originated from competitive demands for environmental protection and economic development was actually a new approach: sustainable development. It was reported that sustainable development was dealing with both equity between generations and equity within generations.

The definition WCED suggested: "*Sustainable development is development which meets the needs of the present without comprising the ability of future generations to meet their own needs*" (WCED, 1987, p. 43). The brief definition of sustainable development by WCED implies that human needs are basic and essential. Furthermore, economic development accompanied by equity to share resources with poor nations should be maintained and the equity should be encouraged by effective citizen participation. Until the recent years, the literature review (e.g Kates, Parris and Leiserowitz, 2005) has pointed out the unclear points of the standard definition of sustainable development.

Governments, non-governmental organizations, and international agencies quickly got used to the term "sustainable development". Since United Nations Conference on Environment and Development (UNCED) which took place in Rio de Janeiro in 1992, the terms "sustainability" and "sustainable development" have been used interchangeably (UNCED, 1992).

To understand the core idea behind "sustainability", every individual has to know why our world is truly unsustainable and what the indicators are which show that our world is unsustainable. Unsustainability has diverse affects on different aspects of our life. Thus, the need for active engagement of every individual towards sustainability is very urgent.

In 2004, Webster stressed that global or local unsustainability trends could not be considered just about environment or nature; but it also deals with social conditions, politics, and the economy as well. Increasing wealth has been accompanied by increasing inequality, both within nations and regions, and in the world as a whole. Thus, many serious health and welfare issues have been placed among the current issues worldwide. In rich nations, wealth has been accompanied by increasing crime, drug, and alcohol abuse, mental health problems. The 2030 Agenda for Sustainable Development (UN, 2015) has affirmed that billions of people continue to live in poverty and inequalities within and among countries are still rising. Gender inequality and youth unemployment has been regarded as great challenge. Depletion of natural resources, adverse consequences of environmental degradation covering the long list of challenges (e.g loss of biodiversity, desertification, drought, global warming, fresh water scarcity) that we suffer are among the threats to the survival of many societies and of the biological support systems.

To overcome the problems emerging with unsustainability trends, education and educational cooperation has been viewed as an important factor in the resolution of the problems regarding these global and local trends. A worldwide action plan, namely Agenda 21 accepted at the Earth Summit in 1992 proposed that education is critical for promoting sustainable development and improving the capacity of the people to address sustainable development issues (UNCED, 1992). A later document, the World Summit on Sustainable Development in Johannesburg also points out the importance of education to meet the basic needs of all including the future generations (WSSD, 2002).

Education for Sustainable Development

Not only are uncertainties and confusions regarding the concept of sustainable development still going on, but also the notion of education for sustainable development (ESD) is similarly open to debate. Pertinent to sustainable development, the literature extensively reported what should be taught and learned in the context of knowledge, skills and values that could aid in attaining the major goals of sustainable development (Makrakis and Kostoulas-Makrakis, 2012). There has been an attempt to make the concept of education for sustainable development evident, which is quite challenging. According to some researchers (e.g. Sauv , 2002), ESD seems to emerge as a current issue within environmental education. This idea was supported by Fien (1993) and Huckle (1993) who indicated an emphasis on issues of sustainability evolving through the prioritization of the understanding of social, political and economic influences on the environment and enhancement of children's awareness, emotional bonding to nature, and responsible actions. In line with these interpretations, Palmer (1998) stated the appropriateness of ESD within environmental education and presented ESD as a new trend for teaching and learning about the environment.

On contrary to these suggestions, some researchers do not interpret ESD as an evolution within environmental education. This may be due to another point of view that gives priority to physical environment and issues such as human impact, preservation and conservation of the nature through environmental education. According to Sterling (2001), ESD can be recognized as sustainable education in which there is a movement toward the renewal of education systems and institutions '*doing better things*' and '*seeing things differently*'. Apart from those qualitatively different interpretations of ESD, in 1998 the Council for Environmental Education published a strategy report (CEE, 1998) titled with '*Education for Sustainable Development in the Schools Sector*' in Sustainable Development Education Panel (SDEP) that is particularly significant for teachers. ESD was defined in this report (p.3) in the following way:

"Education for sustainable development enables people to develop the knowledge, values, and skills to participate in decisions about the way we do things individually and collectively, both globally and locally, that will improve the quality of life now and without damaging the planet for the future".

The report was written by some educators assigned by the government of England and Wales where sustainable development was placed in the revised National Curriculum for the year 2000. It also serves for learning outcomes reflecting each key spheres of ESD. Since there is little exemplification of teaching practices regarding ESD, the researchers (Summers and Kruger, 2003; Summers, Corney and Childs, 2003) which focused on English primary school teachers' reflections on each dimensions of sustainable development into classroom teaching has a great contribution to our knowledge base. Not paying special attention to the complexities and ambiguities stated in the context of the definition of sustainable development, Summers and Kruger (2003) chose to develop a professional development programme considering ESD and the views expressed in the CEE report. The seven CEE key dimensions of sustainable development were presented as a framework in order to aid in developing an understanding of the sustainability of any human activity, and were depicted by demonstrating how they might apply to a particular issue (species loss). Thus, after a preparation period for teachers' professional development on ESD, the participants of this program proposed some examples for

their teaching practices on dimensions of sustainable development (see Table 1) (Summers and Kruger, 2003, p. 169). These authors inferred from the content and teaching strategies included in teachers' classroom activities that they could interpret ESD in line with CEE framework. Furthermore, they evaluated the teachers' views from the perspective of Sauvé (1996). Sauvé has considered the connection between the fundamental elements of ESD and conceptions of environmental education. The educator emphasized that ESD has evolved as a result of a need to update the environmental education discourse through the consideration of the needs and rights of human beings as an integral part of the ecosystem. Hopefully from this perspective, these teachers' conceptions of ESD strongly depended on the citizenship and stewardship covering the importance of taking responsibility, human action, and making a difference. Furthermore, they viewed sustainable development holistically in terms of social, economic and environmental factors. They aimed to engage the pupils in both social and economical issues utilizing the perspectives of people from different communities. To make clear conceptualizations of sustainable development in the wider community of primary school teachers, case-study examples covered in CEE report for classroom practice may not be sufficient. For this reason, Summers and Kruger (2003) recommended that appropriate professional development programs may support in interpreting the dimensions of ESD reported in CEE.

Table 1
Exemplifications of ESD Generated by Primary School Teachers (Summers & Kruger, 2003; p. 169)

CEE Framework Dimensions & Selected examples from primary school teachers in teaching

1. Interdependence

people, the environment and the economy are linked at all levels from local to global

- *Brazilian rainforests are valuable sources used in western medicine*
 - *Global warming from our burning of fossil fuels may contribute to floods in Bangladesh*
 - *The common blue butterfly needs grassland grazed by sheep to survive*
-

2. Citizenship and stewardship

the importance of taking individual responsibility and action to ensure the world is a better place

- *Things can be done to make the school environment better for animals, plants and ourselves, e.g. creating a 'wild' area or planting 'butterfly-friendly' plants*
 - *Children can co-operate with others to take energy saving measures in school*
 - *Individuals can make a difference to the problem of waste by using the '4 Rs' (reduce, reuse, repair, recycle)*
-

3. Needs and rights of future generations

our own basic needs and the implications for the needs of future generations of actions taken today

- *Utilizing more sustainable and less wasteful energy related actions and products conserves finite energy sources for use by those who come after us*
 - *Our children (and their children) have a right to see wild tigers in their natural habitat*
-

4. Diversity

respecting and valuing both human diversity – cultural, social and economic – and biodiversity

- *The variety of species of fish and insects in a river is a measure of water purity*
 - *The rainforest environment can sustain an enormous range of plants and animals, many of which have beneficial uses to humanity – what others remain undiscovered?*
-

Sequel to Table 1 see on the next page.

Sequel to Table 1.

5. Quality of life, equity and justice global equity and justice are essential elements of sustainability and basic needs must be met universally

- *A home, water and energy are universal basic needs which are not equally available to all*
- *People of more economically developed countries have an ecological footprint greater than the earth share only at the expense of other less fortunate people in less economically developed countries*

6. Sustainable change (development and carrying capacity)

understanding that resources are finite and that this has implications for people's lifestyles, and for commerce and industry

- *Burning fossil fuels releases carbon dioxide into the environment – this may exceed the amount which is removed by photosynthesis, leading to global warming*
- *The need for landfill sites for waste disposal is not matched by the availability of suitable land*

7. Uncertainty and precaution in action

there are a range of possible approaches to sustainability and situations are constantly changing, indicating a need for flexibility and lifelong learning

- *Every species in an ecosystem, such as a rainforest, must be valued since we are unsure of the knock-on effects of a species' removal on food chains in the system as a whole*
 - *People can have different views on sustainability issues to do with water which may be in conflict – such as the views of professional fishermen and scientists about catch quotas*
-

In recent years, the discussion about sustainability and education for sustainable development has shifted from search for a universal consensus to a position where there is an acceptance of varying definitions and approaches (Scott and Oulton, 1999). Furthermore, Sauvé (1996) supported this view with emphasizing the role of different paths resulting with the desired outcome that can also serve for the concept of sustainable development. According to Scott and Gough (2003), lifelong learning is the key element in sustainable development and it can be a process – not an end state. Sustainability can be thought as a paradigm for the sake of a future in which environmental, social and economic aspects are balanced in order to endeavor for improved quality of life. During this process, interaction with people from different point of view seems to work well in learning more about sustainability.

An Exemplification of ESD Applications from a Currently Used Textbook in Turkey

ESD efforts undertaken to be able to create a more sustainable future have potential to yield more favorable outcomes when addressed at pupils and young people (Buttigiet and Pace, 2013). This may imply that we should not neglect the ESD efforts towards young people by integrating sustainability issues with appropriate pedagogies. Recently, in order to integrate sustainability issues into curriculum in various disciplines, the common approach followed in different settings has been using the concept as an extra topic; adding a lecture or module to the curriculum (Armstrong, LeHew, 2011). Following a similar trend, in 2013, a significant emphasis on integrating sustainability issues was placed within middle school science education program and relevant textbooks in Turkey. It was the first time that 'sustainable development' as terminology appeared within formal school education programs although it was previously aimed to integrate sustain-

ability issues within various programs in this country. Sustainable development has been viewed as ‘usage of natural resources by considering the needs of future generations from a perspective of personal and national benefits of using sparingly in terms of society and economy’ (MoNE, 2013). With this point of view, some scientific concepts and issues were introduced by constructing a linkage with societal and economic factors in the context of sustainable development. Within the middle school science education program (5-8 grades), the unit of ‘Properties of Matter’ in seventh grade covered some learning outcomes on the topic of household waste and recycling. The topic of household waste management and recycling could provide a significant opportunity to integrate ESD related vision by considering the CEE framework. Thus, the learning outcomes and the content of the textbook could be analyzed by conducting content analysis.

Some exemplifications presented in the middle school science textbook (Ozoglu and Misirlioglu, 2014), in other words some exemplifications that could be used in an ESD oriented science instruction in Turkey were presented in Table 2. These exemplifications were compared and categorized under the main categories of CEE framework by using a qualitative approach. This part of the current study involved analyzing and synthesizing the information that was obtained from a document as a source into a coherent explanation of what was observed and discovered (Fraenkel and Wallen, 2006). Before the analysis was begun, the categories were determined based on the previous work. It was found that the provided examples covered in the relevant textbook fell into ‘interdependence’, ‘citizenship and stewardship’ dimensions of sustainable development. More specifically, the interdependency among people, the economy, and the environment were stressed in the context of recycling. However, some specific examples showing how recycling in a local setting may contribute to the resolution of a problem also experienced in another country on the planet were among neglected sides of sustainable development in the textbook. While considering the recommended teaching activities, a field trip designating the contribution of chemical industry to the national economy was undertaken. Such an activity modeling outdoor education could be empowered by also emphasizing the impacts of chemical industry on the underground water quality and the strategies to eliminate the negative impacts of these applications.

Table 2
CEE Framework Dimensions & Examples from the Currently Used Science Textbook (Ozoglu & Misirlioglu, 2014)

1. Interdependence

people, the environment and the economy are linked at all levels from local to global

- *Rapid growth in human population and consumption patterns contribute a rise in waste*
 - *Recycling of 1 tone of paper prevent cutting down of 17 trees*
 - *People working for recycling industry contribute to national economy and also raise family income*
 - *Chemical industry field trip – the contribution of products to the national economy*
-

2. Citizenship and stewardship

the importance of taking individual responsibility and action to ensure the world is a better place

- *Children co-operate with each other and other people around them to produce some measures to the problem of waste by using recycling and reusing*
-

Conclusion

Considering the challenge of sustainable development, education come across with a complex problem which requires a paradigmatic change of course to fortify principles and values coherent with the process of sustainable development. The global crisis we are currently suffering today has emerged as a consequence of the values that have been neglected or even forgotten, by the most developed countries (Cutanda and Murga-Menoyo, 2014). As emphasized by Mifsud (2012), sustainable development is required to be depicted as crucial for all countries and, even more so, in geographically small regions due to the limited natural resource and high population density. In this aspect, Turkey could be considered as a country needed to accelarete its attempts in order to attain sustainable development goals. Based on the current study, we could also consider attaining the learning outcomes regarding recycling and waste management from a broader perspective titling 'sustainable use of natural resources'. In other words, middle school science education defining 'sustainable development' as mentioned above may use 'sustainable use of natural resources' as an umbrella term to raise an awareness, develop values, and skills as well as responbility while focusing on 4R (reducing, reusing, repairing and recycling) model. However, the current situation forces teachers to centralize their teaching around recycling. More importantly, the limitations of recycling process including some restrictions and the need for energy were not covered in the textbook. The concerns orienting around the needs and rights of future generations, diversity, carrying capacity and development, and quality of life, social justice and equity could be handled in the context of 'sustainable use of natural resources' or even 'recycling and waste management'. Reducing and repairing were not emphasized but these measures could be examplified and examined from carrying capacity and developmental perspective. Lastly and the most importantly, the linkage between climate change perceived and experienced as a global issue and household waste management (Buttigieg and Pace, 2013) does not appear in these scienece textbooks and learning outcomes. However, such a case could be integrated by carefully considering seven key dimensions of sustainable development. At this point, it crucially important to note that professional development programs for teachers should be on-going in ESD process since in-service training of teachers is influcial on sharing updated teaching experiences and provide medium of ESD teaching in formal education (Kabadayi, 2016).

The present study was conducted based on following a path that Summers and Kruger (2003) emphasized previously. On the one hand, it is was reported that the debates on various interpretations of ESD is still going on. On the other hand, Summers and Kruger (2003) evaluated the teaching practices of teachers participating in professional development programs by considering the key dimensions of sustainable development. These authors' interpretations could shed light on developing educational programs on ESD, preparing textbooks, and educating teachers both professionally and personally.

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Correspondence concerning this paper should be addressed to Assoc. Prof. Dr. Elvan Sahin, Middle East Technical University, selvan@metu.edu.tr

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Philosophy of Sustainable Development, Polish Perspective

Tomasz Zygmunt
State School of Higher Education, Poland

Abstract

The aim of the present paper is to awake awareness of the term “sustainable development” and show that the very term is not understood in a unilateral way. A discrepancy of perception and thus understanding of the notion of sustainability blurs its meaning. Numerous scholars and researchers use the term sustainable or sustainability to refer to the area where abilities of using methods to prevent natural resources can be demonstrated. Besides, scholars and researchers, especially in Central Europe, approach sustainability in a holistic way, paying more attention to a doer (subject) than to the doer’s vicinity full of natural resources (objects). Also school teachers in Poland, when given a task to explain the meaning of sustainable development, tend to underscore personal, social and intellectuals’ abilities and skills of people. The teachers’ observations served as catalysts to develop the presented in the paper discussion and conclusions.

Keywords: sustainable development, philosophy of life, education, humanity, semantic field, social milieu

Introduction

Every human activity, being different from a non-human one, is marked by a conscious approach to a pre-planned task and full awareness of the process of implementing the task requirements, foreseeing, at the same time, its final results. Due to individual differences between human beings, it is quite probable that one and the same task given to two individuals can be substantiated in two different ways thus, resulting in two different outcomes. Not only are age, experience or skills responsible for the final image of substantial or insubstantial value of human activity. Before turning any idea, plan or intention into reality, it is strongly desirable for the doer to perceive and comprehend all those intricacies which he can come across on the way to the designed destination. Besides, it has to be remembered that ideas or plans become very demanding and perplexed when the final outcome of carefully designed and conscious actions is to be human development of any nature. Out of many developmental aspects, sustainable development of a single human being seems to be of paramount importance for a harmonious and safe functioning of humanity.

Whenever sustainable development becomes a subject matter of discussion, it gives rise to queries and controversies as the issue of sustainability is differently perceived by different social communities in different countries. This is so because the very term – sustainability – is manifested in an array of meanings and interpretations, depending on the needs of its application to reach goals either of social and practical, on the one hand, or purely academic nature, on the other. Therefore, the task of the present discussion is to attempt to penetrate and clarify the notion of sustainability as it is perceived and understood by some circles in Poland.

Philosophy of Sustainability

Generally speaking, the notion of sustainability, as it appears in the language of Polish academics, is not monolithic. First of all, it has to be stressed that scholars representing sciences, especially the earth sciences or the modern sciences of ecology, stress the practical aspect of sustainability and thus, understand it differently from those who represent the humanities and view sustainability through the prism of its non-material values. Moreover, the understanding of the very term has much to do with the influence of English from where the term was adopted to Polish via translation. But the Polish equivalents, to a certain extent, blur the true meaning of the term, and thus, cause controversies. To exemplify the present discussion, let us have a look at the semantic field composed by the equivalents of the verb sustain. In Polish, the verb sustain, as it appears in English – Polish dictionaries, directs our attention to the spheres of activities denoted by the following verbs: suspend – maintain – carry – hold – supply – withstand – experience – claim – affirm – suffer – perform – continue – extend (Bulas & Whitefield, 1967; Stanisławski, 1980). Very rarely, is “sustainability” explained shortly as related to support. As a matter of fact, a vast majority of dictionaries, including encyclopedic dictionaries, do not even give such an entry as “sustainability”. Instead, they only include “sustainable”, explaining it as capable of being sustained or maintained (Webster’s New Universal..., 1983). Finally, “sustained” is defined as “maintained at length without interruption, weakening or losing in power or quality” (Webster’s Third..., 1993, p. 2304).

The content of the presented above semantic field and its clash with the commonly used meaning of the word “sustainability” derived from the field, points to the quality of translation as responsible for the correct or incorrect use of any word, since translatability makes us sensitive to the understanding of the very thought or idea embedded in the translated word (cf. Zygmunt, 2016). Hence, the multitude of Polish equivalents to the English verb “sustain” must have resulted in multiple versions denoting sustainability, in many cases deviating from its core meaning. As mentioned earlier, representatives of exact sciences or natural science view sustainability as a factor applicable for practical reasons in the sphere of ecology or economics while the humanity minded academics pay more attention to spiritual or intellectual values to become elements of sustainable development of Man, perceived holistically (cf. Salite, 2015). At this point we witness two philosophical trends which can be applicable in the process of human development, in general.

One may object to the employment of philosophy and the philosophical approach to the very understanding of sustainability. Without a doubt and reservation it can be claimed that sustainability or sustainable development is directly related to social philosophy and the philosophy of life in its milder form, known in German as *Labensphilosophie*,

which in one way or the other forges a way to accomplishing the designed plans, and thus success in human life.

To understand the above mentioned relationship we have to understand and accept the role played in human life by philosophy, in general. The role assigned to philosophy becomes transparent when we only understand its true nature. The term “philosophy” is composed of two Greek words: *filein*, meaning to love, and *sofia* which means wisdom. Hence, philosophy means “the love for wisdom”. Undoubtedly, wisdom is the sense of human life which can be perfectly shaped due to the human strive for development of any nature, including sustainable. In this respect, philosophy of life in its pragmatic manifestation, especially this one represented by William James (1995) gives indications for human development.

According to James’s view, the world we create through our daily activities is a cluster of diverse experiences that can only be understood through a proper application of methods springing up from empiricism. Hence, this empiric view clearly shows that our knowledge derives from experience. Since the consequence of human development is both the development and deepening of knowledge, and since knowledge derives from experience, this sets a staged process of gaining experience which is responsible for harmonious and sustainable development. Nevertheless, it has to be taken into account that empiricism does not ignore the power of mind of the involved in human activity doer, and his acts of observation but considers them as vital for the final outcome of any empirical approach. Moreover, an active human being – doer – is not fostered in isolation but in a social milieu and in a given social situation. Hence, James stresses that people change and develop how they act. Thus the development of an active individual will be directly related to the role he actually plays in the social environment. At this point we can risk assuming that if you are “great”, the social environment will help you develop your greatness (James, 1956; 1995).

Far more influential in developing and shaping human personality is social philosophy and also, although lesser in scope and effect, philosophy of dialog represented by Buber (2002) and Ebner (in Green, 1980) who emphasize the role of relationship between human beings linked by a direct contact enabling them communication and thought exchange. Undoubtedly, such relationship greatly contributes to human development (see also Zygmunt, 2016).

Concentrating our attention on the role of social philosophy in the process of sustainable development of Man, first of all, we have to admit that this is the human being who is responsible for whatever happens in the social environment. Again, this is the human being who is responsible for birth control and thus, increase or decrease of birthrate. Moreover, urban or rural communities need to be adapted to the environment and therefore, consume a variety of survival resources such as, for example, useful lands and waters, oil or coal that can be used to facilitate the life of communities and increase their wealth. Inevitably, the process of making use of natural resources is directly related to consumption. In consequence, the consumed resources and resources-related by-products have to be dumped as consumption always results in the waste and necessity of its storage or wipeout. At this point we need human understanding of the problem of environmental protection directly related to human behavior and daily activities, often thoughtless, causing waste heat or water wastes. Paradoxically enough, environmental protection dwells in the human mind and the human ability to perceive the source of danger.

Viewing resources as a reserve supply that can be drawn upon when needed we often forget that resources can be also perceived as all the money, property or skills that you have available when you call for them. In this respect, we can talk about financial resources, technical resources or intellectual, inner resources pertaining to personal qualities. Undoubtedly, intellectual abilities of community members and their full understanding of the essence of sustainability is a guarantee of the world's safety and human development. Ignorant and thoughtless communities are unaware of menace resulting from human improper behavior in environmental and economic spheres of sustainability. This is so because unawareness is a source of destruction which hampers sustainable development. In many cases people behave and react unintentionally but destructively as they have never been taught what is right and what is wrong. Therefore, *conditio sine qua non* of sustainable development is the holistic development of Man regarded as the key element of the social sphere of sustainability. Only education with regard to the philosophy of life can give guidance to humanity pointing both to environmental threats and ways of their avoidance. The world can only be saved by conscious and thoughtful people understanding their role in its development and protection. This is the indication to what philosophy of sustainability should refer.

As mentioned earlier, sustainability and especially the notion of sustainable development is perceived in diverse ways in Poland, depending on the social and professional group of perceivers. What is important in this case, is the perception and understanding as demonstrated by school teachers as formal education for sustainable development usually starts there. For this reason a brief research was designed to examine teachers in selected schools of the Lublin School District.

Interview

In order to check the level of understanding of the term “sustainable development”, a brief research in the form of interview was carried out with 47 school teachers of random choice, representing 19 schools (ranging from elementary to high school level) of the Lublin School District. The teachers were given only one simple question: **What do you understand by sustainable development?** (sustainable development means, in Polish, *zrównoważony rozwój*), and asked to write in Polish an answer in one, maximum in two sentences.

A careful analysis of the received answers allows for categorization and arranging them into 6 classes, as follows:

- Development of mental qualities and communicative skills (A = 16)
- Holistic development of Man (B = 11)
- Harmonious deepening of knowledge, combining theory and practice (C = 7)
- Development of cooperative abilities/social skills (D = 6)
- Ability to function in a social/professional environment (E = 4)
- Ability to be sensitive or protective to the environment (F = 3).

The capitals and digits in the brackets show the number of answers assigned to each distinguished category.

A thorough analysis of the above mentioned categories permits to combine them thematically and logically in order to distinguish two groups – one characteristic of the dominance of intrinsic features of human development (A, B, C), and the other one, where extrinsic features prevail (D, E, F). None of the groups is purely extrinsic or

intrinsic. Anyway, the decision of forming such groups as above was made only on the basis of a sheer predominance of features found in the analyzed answers.

Therefore, as far as Category A is concerned (Development of mental qualities and communicative skills – 16 answers), the subjects stressed the importance of intellectual development and ability to gain and share knowledge in a formal and informal way. Besides, the knowledge of foreign languages and ability to gain and share knowledge due to international contacts (for example, exchange programs) was mentioned, as well.

Category B (Holistic development of Man – 11 answers) was hard to decide as the answers were very general, pointing to *nomen omen* general or holistic development. In two cases, the ability to demonstrate general knowledge for functional purposes was underscored.

Category C (Harmonious deepening of knowledge, combining theory and practice – 7 cases), to some extent, is close to Category B as the reference to functional purposes can be found in both categories. However, the focus on combining theory with practice is seen in all the respondents' answers; they also emphasize the value of harmonious development of the whole person.

With reference to Category D (Development of cooperative abilities – 6 cases), it is quite evident that social skills are in focus. In all the answers, the ability to cooperate with partners and function in a social milieu was viewed as priority.

A certain resemblance can be found between Categories D and E (Ability to function in a social/professional group – 4 answers) where the respondents always put stress on functioning either in a social or professional group. No doubt, such functioning can be considered as both social and cooperative in character.

Finally, Category F (Ability to be sensitive or protective to the environment – 3 answers, only) is a clear manifestation of interest in extrinsic matters related to sustainable development.

The table below gives a pure illustration of the examined teachers' understanding of sustainable development and presents their visions in the frequency of occurrence and percentage.

Table 1
School Teachers' Perception of Sustainable Development in the Frequency of Occurrence and Percentage

What do you understand by sustainable development?			
Category	Frequency	Percent	Total
A	16	34.04	47
B	11	23.41	47
C	7	14.89	47
D	6	12.77	47
E	4	8.51	47
F	3	6.38	47

It is quite significant that a vast majority of the examined teachers pointed to intrinsic factors as responsible for the process of human development. Although, as mentioned earlier, a clear division into answers either intrinsically or extrinsically inclined is difficult to determine, there is a great resemblance between the answers under Category

A, B, and C in comparison to another resemblance between the answers classified as Category D, E, and F. If we only accept that the answers under A, B and C are of the intrinsic nature while the responses classified as D, E and F are extrinsically related, we can easily observe that the image of sustainable development as created by the selected Polish school teachers strongly relies on intrinsic elements attributed to Man. Out of 47 responses, the answers considered as intrinsic in nature amount to 34 (72.34%), which in comparison to 13 answers (27.66%) characteristic of extrinsic inclination, puts up a hallmark pointing to the examined teachers' understanding of sustainable development. The obtained results show that a vast majority of the subjects associate sustainable development with intrinsically related factors and consider it as the very essence of human being.

As comes out from the above presented discussion, development in general is attributed to human development inseparable from the development of mental qualities and communicative skills and therefore, holistic development of Man (27 subjects = 57.45%). Social and functional qualities are stressed by those subjects who underscore cooperation and the development of those skills and abilities which allow for professional functioning in a social milieu (10 opinions = 21.28%). Quite naturally, overconcentration on the development of human being must have resulted in a marginal treatment of sustainable development in relation to the environment (3 responses only = 6.38%).

Discussion

The above-presented results resemble, at least to some extent, the observations by Świtała (2015), who also points to the fact that the understanding of the concept of sustainable development varies among Polish teachers, being "intuitive rather than based on scientific or theoretical knowledge" (p. 129). The interview results clearly show that the examined teachers usually viewed sustainable development through the prism of intrinsic values directly related to the development of knowledge and mental qualities, and therefore – to the holistic development of Man (c.f. Category A, B and C). Therefore, intrinsic in nature values "which form the foundations of moral education and help us to get to know both ourselves and others better", as Świtała (2015, p. 125) notices, could influence the teachers' image and perception of sustainable development. Although in minority (c.f. Category D and E = 21.28%), they also find cooperative abilities and the functioning in a social or professional environment as a great asset enabling human development. Totally, an overwhelming number of responses (44 = 93.62%) underscores the need for holistic development and thus, the examined teachers identify sustainable development with the development of such features as behavioral, temperamental, emotional and especially mental that characterize a unique individual. In this respect, reflections and indications which can be worked out on the basis of the obtained during the interview data parallel the observations and opinions expressed by Salite (2015), Świtała (2015), Badjanova & Iliško (2015) who also perceive the holistic approach to education and intrinsic values, in general, as attributes en route to sustainable development.

Yet, extrinsic matters directly related to sustainable development focused on environmental protection were present in the research results, although in a scanty count (6.38%). It can be expected that a relatively low count may result from the lack of environmental literacy and sensitivity to environmental care and protection, which is a deficit in teachers'

competence found not only in Poland but in Central Europe, in general (c.f. Šimonova and Činčera, 2016).

Nevertheless, it can also be expected that not only the lack of environmental literacy and sensitivity to environmental protection might have influenced the teachers' point of view and understanding of sustainability. It is very probable that the main reason of perceiving and identifying sustainable development with the development of human being was the translation of the very phrase from English into Polish. Hence, the term **"sustainable development"** appears in the Polish writing devoted to sustainability as **"zrównoważony rozwój"** where **"rozwój"** means development, and the meaning does not cause any problem in understanding the word's usage. The problem is caused by the used in Polish word **"zrównoważony"** which, as an adjective, defines the sphere of harmony and balance. In consequence, sustainable development is, first of all, understood as harmonious or balanced development. No wonder then, that bearing in mind the term **"zrównoważony"**, the examined teachers concentrated their attention on harmonious and balanced development of a person.

Although the term development (in Polish **"rozwój"**) seems to be clear, yet it deserves deeper consideration. Fundamentally, development is understood as irreversible, harmonious, and well-balanced sequence of structural and functional changes dependent on both internal and external factors responsible for achieving the acme in the case of the individual or a social group. Moreover, the very term such as **"life span development"** as used in pedagogy, directly points to the core element of attainment and development, that is the human being. Even though there is some divergence in defining development, resulting in sub-categories such as linear development, socio-dynamic, or transformational development, all of them concentrate on Man as the subject. Hence, this is the subject WHO develops and WHOSE development exerts a powerful influence upon the development of the subject's vicinity. Yet, this is the subject whose sustainable development is directly related to the sustainable development of the Universe. What counts here is the intellectual development of a person and his understanding and sensitivity to the environmental threats. This is how the internal development, through the external functioning of the developed subject, causes that the objects which compose the environment can be protected and saved for generations.

Of great significance and value for the understanding of the notion of sustainable development is Urie Bronfenbrenner's ecological systems theory also known as the Human Ecology Theory (Bronfenbrenner, 1979). According to the theory, human development is influenced by the different types of environmental systems. These systems are composed of the micro system (that is the direct environment we live in), the mesosystem (relationships between the micro systems in the individual's life), the exosystem (social relationship evoked by human activity or the lack of activity), the macro system (cultural setting), and finally, the chronosystem (transitions and shifts in the individual's lifespan). This theory helps us understand how strongly we are related to the environment by shaping it, thus shaping simultaneously our behavior, too. Through the shaping of our behavior, we develop. This is the point which Urie Bronfenbrenner raises in his further studies where he discusses the ecology of human development (Bronfenbrenner, 2005). Human balanced development attained in the environmental setting guarantees our sensitivity to the environmental systems. This is so because the whole process of human development is shaped by the interaction between an individual and the environment. Hence, this is the essence of sustainable development.

As a matter of fact, the presented by Bronfenbrenner point of view finds resemblance in the examined teachers' perception of sustainable development. They also stress the human aspect of sustainable development by viewing a human being as a *spiritus movens* of sustainability.

Conclusions

First of all, sustainable development viewed from the Polish perspective refers to the development of Man. If the intention is to develop the contemporary world, in general or the environment we live in, in particular, the starting point is the development of humankind – all people who create the environment and foster it.

It could not be risky to say that in the eyes of the examined Polish teachers' sustainable development is viewed as a holistic process that effects a single human being, which, in turn, seems to be of paramount importance for a harmonious and safe functioning of humanity. Moreover, balanced and harmonious development of human features indispensable for functioning in the environment of any nature is essential for attaining high social status. It can be expected that with this indication in mind, the majority of the subjects tried to characterize sustainable development, stressing unintentionally the validity of the holistic approach.

It cannot be denied that the development of humanity relies on the development of each individual composing it. It cannot be also denied that a fully developed individual becomes the subject who controls and exerts influence upon the objects found in the vicinity. Only then, can we say that the environment is safe and protected when it remains under maintenance and surveillance of the fully developed subject.

According to philosophy of life (*Lebensphilosophie*), human activity determines the level of human knowledge and perception of the outer world. Life is dynamic because human activity is dynamic but an active individual is required to be aware of the results of his or her specific behavior and actions (c.f. James, 1995). Also social philosophy and philosophy of right concentrate both on human activity within a social community and a human being as an active element of the Universe. Hence, every social group is perceived as a structured institution which serves its members to develop (c.f. Murphy, 1994).

Unfortunately, we often ignore the human being in the discussion on sustainable development turning our attention to non-human spheres of sustainability, especially economic and environmental. No sphere can develop without the development of a human being. It is strongly believed that philosophy of sustainable development can change the perspective with regard to real-sense development, showing clearly the role of a person in it. This is philosophy of sustainable development which puts the human being into the center of attention and esteem. Therefore, a person becomes the subject while the environment is treated as the object of the Universe. This is a person who evolves through the process of changes while functioning in the environment thus, effecting it and protecting due to his developed awareness and understanding of the need for saving the world.

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Correspondence concerning this paper should be addressed to Dr. Tomasz Zygmunt, Email: tomzyg@pwsz.chelm.pl or tomzygmunt@gmail.com

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Culture in Sustainability – Defining Cultural Sustainability in Education

Marja Laine
University of Helsinki, Finland

Abstract

The definition of cultural sustainability in education is explored in this article by looking into conceptions of cultural sustainability collected through expert queries and focus group engagement. These conceptions are compared with the scientific and especially pedagogical discourse on the matter as well as Soini and Birkeland's theory of story lines of cultural sustainability and Barth's theory of micro-, median- and macro-levels of culture. The analysis shows that the viewpoint of education brings a new dimension to the discussion on cultural sustainability. It specifically broadens the "culture in" definition from the perspectives of supporting children's and youth's identity process and micro-level encounters. From a theoretical point of view, the study therefore adds depth to the examination of cultural sustainability.

Keywords: cultural sustainability, sustainability education, cultural heritage, cultural rights, cultural identity, basic education

Introduction

In this article conceptions of cultural sustainability (CS) collected through expert queries and focus group engagement are introduced. Second, these conceptions are compared with scientific and especially pedagogical discourse on the matter. The aim of this study is to create an overview of what the Finnish curriculum requirement (NBE, 2014) on the promotion of CS means in basic education. The wide interest towards the learning outcomes of Finnish schools (Niemi, Toom & Kallioniemi, 2012; Sahlberg, 2015) makes Finland an especially appealing case study in planning and developing culturally sustainable education.

In 2011–2015 the collaborative work on CS by a European research network of approximately one hundred researchers is a prime example of increasing interest in the field. The network, COST Action IS1007 Investigating Cultural Sustainability, carried out transdisciplinary work on the concept and practices of CS. As one result of this collaboration, a three-role approach to defining CS was developed: culture as, in and for sustainable development. The "culture as sustainable development" approach defines culture as the basis or core of sustainability, an approach which generates sustainability. Culture is utilized in finding a new understanding of the human place in the world and

highlighting one's human role as a potential initiator of change (Dessein, Soini, Fairclough, Horlings, 2015). Based on the previous analysis of the author, change towards a culturally sustainable way of living is achieved through familiar educational themes with various titles such, as environmental and consumer education (see Laine, 2013a). The "culture for sustainable development" approach sees culture as the "glue" which combines ecological, social and economic pillars. The downside is that this definition has not been widely used (Dessein, Soini, Fairclough, Horlings, 2015).

The "culture in sustainable development" approach views culture as having a separate, independent role as part of sustainable development, as a so-called fourth pillar in addition to ecological, economic and social sustainability. In the author's previous analysis, this approach was called cultural specifics (Laine, 2013a). The author sees the "culture in" approach as appealing from the point of view of educational sciences and education as practice, because it highlights such themes as multiculturalism, cultural rights, local culture and cultural identity, and other themes that are strongly present in the Finnish national core curriculum. From this point of view, the "culture in" approach expands our way of seeing CS by taking into account the contents of the pillar model approach, which can be utilized in authenticating implications for the individual pupil. In this article, after presenting the data from the "culture in" perspective, I will expand the definition of CS in education by comparing the found conceptions with Soini and Birkeland's theory of story lines of cultural sustainability and Barth's theory of micro-, median- and macro-levels of culture so that a pedagogically relevant definition of cultural sustainability can be achieved.

Research Question, Method and Data

Because there is no existing definition of education-related contents in the field of CS, the following research question was formulated: What are the experts' conceptions of outlining CS in education? This study is a qualitative study with a multifaceted and detail-oriented approach to the research data. Qualitative research relies on an inductive analysis based on the comprehensive gathering and collection of data in the surrounding environment (Hirsjärvi, Remes & Sajavaara, 2009). However, including a particular theme or subtheme under the umbrella of culturally sustainable education should not be viewed as the main aspect of this study, but rather the increase in the understanding of the multi-faceted nature of sustainable education. Therefore, after reducing and grouping the research data, the analysis is continued by making deductions based on the subthemes and themes. An additional research question therefore was formulated: How can one supplement experts' conceptions so that a definition of culturally sustainable education would be coherent not only with the data of this study but with the current discussion concerning cultural sustainability and be supplemented with pedagogical aspects from the viewpoint of the Finnish educational system? The latter research question was answered by utilizing Soini and Birkeland's theory of the story lines of cultural sustainability and Barth's theory of the micro-, median- and macro-levels of culture.

The Association of Cultural Heritage Education in Finland was responsible for the collection of the data in 2011 (see Laine, 2013b). The author, employed by the association, collected the research data, which consists of two surveys and memorandums of six focus group meetings. Participants who answered the surveys or attended the group meetings share an interest in CS and work in an expert position and/or in an expert

leadership position. Their professions include scholars, adjunct professors, teachers and coordinators, and so on. The fact that all the participants are experts is crucial, as the aim of this study is the generation of new information by studying conceptions, not statistical generalizations. Thus, it is pivotal that the participants know the phenomenon under investigation as well as possible. Because no established group of CS experts was available for this study, so-called snowball sampling was used in the data collection phase. Information on possible participants was searched by looking for Finnish studies and articles where cultural sustainability is mentioned. This led to the creation of a mailing list, which was then used to invite people to answer two surveys and take part in focus groups. The experts that were found were also asked to name other experts or researchers or studies, which contributed to finding more experts on cultural sustainability as they were added to the mailing list. In addition to this, the experts on the mailing list were given the opportunity to forward invitations to people they preferred (Tuomi & Sarajärvi, 2009). None of the participants wished to remain anonymous. The invitations were sent to the cultural sustainability mailing list of the Association of Cultural Heritage Education (466 persons) and were also distributed to other mailing lists by the Finnish Museums Association, the Finnish Association for Environmental Education and the OKKA Foundation (the Foundation's aim is to develop education, and be in responsible for the certification of sustainable development in educational institutions).

The study started by defining CS (electronic survey 1, 23 responses). The respondents were asked to reflect on open questions about cultural sustainability, for example why a particular theme should be considered culturally sustainable. Answers were from one to three pages. Starting the study by defining cultural sustainability was necessary, for no established definition existed in the material collection phase. Outlining education that promotes cultural sustainability therefore also required outlining cultural sustainability. The study then continued with questions on the contents of education (electronic survey 2, 59 responses). This survey was used to outline measures, models, practices and educational needs to achieve cultural sustainability. In addition, values connected to cultural sustainability were outlined. Answers were approximately one page long.

Discussion on the themes of the surveys was expanded in the focus groups (see e.g. Liamputtong, 2011). There were three groups, which each met twice. The invitation was an open one and was sent by e-mail. Groups met in 2011, weeks 43 and 47. Meetings were approximately four hours long. The content of these six meetings were written down as memos, 4-6 pages long, by a secretary and were approved by the participants. The memos are named 1.1-1.3 (week 43) and 2.1-2.3 (week 47). A total of 25 people participated in the groups. The people attending the groups were sent an invitation in advance, which included the agenda and a list of topics to be covered. The first meeting dealt with outlining cultural sustainability in the context of education and related educational values, goals and skills. The second meeting was concerned with culturally sustainable practices, pedagogics and educational needs in the field of education.

The research data was analysed via the method of qualitative data-oriented content analysis to find conceptions which defined CS in education. The units of the analysis were not predefined and theory was generated from within the research material. A typical challenge with data-oriented content analysis that observations are saturated with theory was avoided by proceeding with a systematic and data-oriented approach without comparison to theoretical frameworks. Recurring expressions that describe definitions of education promoting culturally sustainable development were sought after

in the data. Expressions that were found were grouped into groups of similar expressions, and these groups were then formed into themes (Tuomi & Sarajarvi, 2009).

Because of fluctuation in the expressions and terms used, the starting point of the analysis was not the maximum recurrence of conceptions in the data. Instead, recurrence of content was looked for, and themes that connected these contents into clusters were created. For example, a subtheme “locality” consists of concepts such as the local environment, local heritage, and local museums. So that the subthemes would describe the participants’ connotations as accurate as possible, a description of each subtheme was attached in the results of the study (Figure 1). This was also necessary because the participants did not hold definitions of for example culture, cultural heritage or tradition in common. This study is not therefore bound by any predefined conception of these terms. To take into account the terminological challenges in the analysis, a description of the subthemes’ contents has been included with the subthemes. This is to help the reader take note of the complexity of the connotations embedded within a subtheme and also to add reliability. Descriptions of the subthemes paint a more detailed picture of how the subtheme is formulated. The descriptions also help in recognizing the education-related contents of each subtheme.

If an expression only appeared once in the data, this was not considered to be an obstacle for it being incorporated into the analysis. An expression was included in the results if, for example, it had a synonym connection with other expressions or it added information. The expression “international cooperation”, for instance, was only mentioned once but because as a term it connects closely to internationality and global education, which were mentioned more often, it was added in the description of the “internationality” theme. This was justified by the fact that “international cooperation” is an explanatory expression used widely in the field of education and is therefore easily approached and understood. The term “sound environments” only mentioned once, brought new information, and was thus included in the description of the subtheme “cultural environment”, but not as its own subtheme. The choice to include expressions mentioned only once is based on the tradition of qualitative research and the starting point of the study was to generate new information through experts (Tuomi & Sarajarvi, 2009).

Concepts Defining Culturally Sustainable Education

Conceptions defining CS in education were searched for in the surveys and memorandums of focus group meetings. The conceptions were twofold in defining CS. On one hand, the conceptions dealt with the change in school culture towards sustainability (“culture as”), and on the other hand, they were about the intrinsic values of culture (“culture in”). This data analysis focuses on conceptions of CS according to the “culture in” approach, that is to say, on themes which can be seen as representing the view of culture as one of the four pillars of sustainability or, on the other hand, the intrinsic value of culture-related specifics. The deductive analysis presented in the end takes the “culture as” approach into account.

To achieve an overall picture of culturally sustainable education, contents coherent with the “culture in” approach have been looked for in the experts’ conceptions in this study. Thus, the earlier study (Laine, 2013a) of the “culture as” approach is supplemented by an attention to the role of culture as a separate, independent part of sustainable development. Grouping and describing the contents offers a more specific view of, for example,

the content of instruction in culturally sustainable education, and therefore helps the organizers of education such as schools, municipalities and the governmental level take sustainability into account in a more comprehensive way. Eight subthemes, introduced along with their descriptions in Figure 1, were found from the research data: creativity, cultural customs, cultural heritage and awareness of history, cultural landscapes, interaction between generations, internationality, and locality as well as multiculturalism and diversity.

Example from the original expression (source in brackets, translation by author)	Subtheme and the description of the subtheme	Themes
<p>“Culturally sustainable education appreciates individual creativity, insight and differences.” (Memo 1.3)</p>	<p>CREATIVITY:</p> <ul style="list-style-type: none"> • different forms of art, such as architecture, music, design, handicrafts, literature and language • creativity in day-to-day life (e.g. dressing) • memory organizations preserving creative content such as libraries • the right to participate in culture and visit culture organizations 	<p>LOCAL CULTURE: Local environment and culture as well as local traditions NATIONAL CULTURE: National culture and cultural heritage GLOBAL CULTURE: Internationality and multiculturalism</p>
<p>“A person acting according to cultural sustainability masters cultural customs and knows how to get along with people who represent different cultures.” (Memo 1.3)</p>	<p>CULTURAL CUSTOMS:</p> <ul style="list-style-type: none"> • knowledge of customs • school festivities • celebrations (e.g. Kalevala Day) 	
<p>“Appreciation of ones own culture and heritage, cherishing and maintaining them. This doesn’t need to mean becoming stuck in the past, but learning from it: adapting one’s heritage to modern life.” (Survey I)</p>	<p>CULTURAL HERITAGE AND AWARENESS OF HISTORY</p> <ul style="list-style-type: none"> • preservation and transmission of cultural heritage and traditions • sense of time perspective and awareness of history • adapting and transforming one’s cultural heritage (e.g. food and celebrations culture, built heritage, profession cultures, spoken tradition, religion heritage) • storage of heritage, heritage organizations such as museums and art institutions • plant heritage 	
<p>“Cultural landscapes and natural heritage are very suitable viewpoints for pre and basic education, also for day-to-day sustainable functions in early childhood education as part of environmental education.” (Survey II)</p>	<p>CULTURAL LANDSCAPES:</p> <ul style="list-style-type: none"> • architecture • contextual architecture and development works • developing infrastructure anthropocentrically • history appearing in the environment • natural heritage • landscapes • ecosystem services • the sound environment • plants and gardens • living off nature: picking berries and mushrooms, hunting, working with natural materials 	

Figure 1. Examples of Original Expressions, Subthemes With their Descriptions and Themes Derived From the Data

Sequel to Figure 1 see on the next page.

Example from the original expression (source in brackets, translation by author)	Subtheme and the description of the subtheme	Themes
“Culturally sustainable development takes different generations into account.” (Memo 1.3)	INTERACTION BETWEEN GENERATIONS: <ul style="list-style-type: none"> • learning from and appreciating one’s family • transmission of knowledge and skills • dealing with issues from the past (difficult heritage) • bringing together different generations and times 	LOCAL CULTURE: Local environment and culture as well as local traditions NATIONAL CULTURE: National culture and cultural heritage GLOBAL CULTURE: Internationality and multiculturalism
“From the standpoint of sustainable development, one should see examples from different cultures alongside with ones identity and surroundings so that development could be globally sustainable.” (Memo 1.2)	INTERNATIONALITY: <ul style="list-style-type: none"> • global education • international collaboration • the world as a learning environment 	
“Co-operation with the surrounding community and local actors provides a working ground for cultural education.” (Survey II)	LOCALITY: <ul style="list-style-type: none"> • working with local culture (e.g. local museums) • close by nature • local heritage 	
“Multiculturalism and growing to be part of it is culturally sustainable.” (Survey II)	MULTICULTURALISM AND DIVERISTY <ul style="list-style-type: none"> • cultures, traditions, different cultural heritages, religions • consideration of pupils with immigrant backgrounds • dialogue between cultures 	

Sequel to *Figure 1*. Examples of Original Expressions, Subthemes With their Descriptions and Themes Derived From the Data

The example of an original expression found under the subtheme “cultural customs” (see Figure 1) describes the nature of the research data and the steps of the analysis well. The expression describes the contents of two subthemes (“multiculturalism” and “cultural customs”) and shows the overlapping nature of the themes. Cultural customs is part of multiculturalism but cultural customs are not necessarily multicultural. So, the data reflects respecting and transmitting local and national culture and at the same time the data reflects the multiculturalism approach. No preference for either of the two approaches is, however, present in the research data. Neither was there any explicit expression of national or local culture not being viewed as diverse in itself – a need, for example, to define Finnish cultural heritage as consisting of particular, invariable content was not found in the data. The lack of expressions, however, does not exclude the existence of such thinking as an implicit supposition.

In addition to the subthemes, three main themes can be distinguished from the research data: local culture, national culture, and global culture. As the previous example of the subtheme “cultural customs” indicates, the main themes have not been generated based on the contents of one or a few subthemes, but instead reflect the contents of the whole data. It should be noted, that the themes are not used to outline culture as either local, national or global. Culture crosses boundaries and is ever-changing. The themes

are used to explicate the educational approach evident in the research data: education should take into account the expression of culture on a local, national and global level. In addition to this, it is important to acknowledge the previous or still ongoing critical discourse on many of the terms being used, and that the participants are not committed to using just one definition of any of the terms. The term “multiculturalism”, for instance, has been criticized for not reflecting the diversity on the micro-level and that using the term even falsely creates many cultures (e.g. Saukkonen, 2013). I now continue the analysis and interpretation of the results by using Soini and Birkeland’s theory of story lines of cultural sustainability and Barth’s theory of micro-, median- and macro-levels of culture.

Culturally Sustainable Education and the Scientific/Political Discourse on Cultural Sustainability

In this section, the way in which descriptions of culturally sustainable education relate to the scientific discourse on CS is explored. This is done by using Soini and Birkeland’s theory of story lines of cultural sustainability. It is important to see whether the results of this study resonate with the broader scientific discourse – to see whether this study adds to the scientific discourse and to see what kind of themes that are missing from the research data of this study can be found in the scientific discourse.

Soini and Birkeland have organized the scientific discourse on CS around seven story lines that are partly interlinked and overlapping but differ in terms of how the contextualized aspects are grouped. From these story lines they created a summary of the political contexts of CS (Soini & Birkeland, 2014). It should be noted, however, that the results of Soini and Birkeland’s discourse analysis are tied to political discourse and its established concepts and not to scientific theories, so the definition of CS and terms connected to it are disconnected from their original context in the articles they examined, nor are they analysed on a meta-level. This does not diminish the usability of the results of Soini and Birkeland’s analysis, although it is important to continue the analysis of their data by comparing the results with scientific theories so that the definition of CS can be examined on levels other than normative discussion and the terms used in it. Moreover, discussion on education and its goals should also take into account the underlying pedagogical decisions. These themes will be discussed later in this article.

Cultural heritage and the use of heritage and culture are common themes in the scholarly discourse on CS. Soini and Birkeland’s analysis of the *cultural heritage* story line describes cultural heritage (tangible and intangible) as a stock of cultural capital that has been inherited from previous generations and can be transmitted to future generations. The use of cultural heritage and cultural services form the base of the *cultural vitality* story line. This second story line is concerned with how cultural services, events and heritage meet the changing needs of their users and how cultural heritage is made accessible in a sustainable way. This story line sees cultural change driven by globalization and technology as mainly positive, but at the same time it raises the question how the change can take place without damaging cultural continuity or identity or cultural capital (Soini & Birkeland, 2014). These two story lines represent the conservative context of the political aspects of CS. The conservative political context is also present in the research data of this study: cultural heritage and cultural vitality are both seen as part of culturally sustainable education (see Figure 1). The conservative political context

also represents the pillar model of sustainability, the “culture in” approach to sustainability.

The third story line, *economic viability*, adopts heritage as a resource for economic vitality and emphasizes a dynamic approach to culture and the reproduction of culture. This story line represents the neoliberal context of the political aspects of CS (Soini & Birkeland, 2014). Although the data of this study does not explicitly mention culture from the viewpoint of economic viability, the themes of the conservation of cultural vitality by applying traditions to modern day, maintaining different skill sets, development, and media visibility are present. In addition, the significance of architecture, land use and construction are well presented. These mentions can be seen as having links with the story line of economic viability, although economic viability in itself does not come up as a theme in defining culturally sustainable education.

The *cultural diversity* story line refers to the recognition of the diversity of values, perceptions, attitudes and material cultural manifestations. The story line, however, presents an instrumental conception of culture. Cultural acceptance is seen as important in promoting the implementation of development schemes designed to reach environmental goals or to improve the quality of life of local people. The fifth story line, *locality*, is linked to cultural diversity as it emphasizes the perceptions and cultural rights of ethnic minorities, indigenous people and other marginalized people whose capabilities to participate in or defend their rights are threatened. This story line prefers locally based development to global development. New livelihoods and activities are often seen as a threat. Involvement of locals in planning and decision-making, as well as a deeper understanding of local cultural practices, is emphasized. These two story lines represent the communitarian context of the political aspects of CS, but are partly contradictory in their approach to globalization. The cultural diversity story line represents a globalization approach whereas the locality story line is anti-globalist. All in all, with the exception of the economic viability story line, the majority of the story lines see CS as threatened by globalization (Soini & Birkeland, 2014). This rejecting attitude towards globalization is partly present in the research data of this study, but does not play a central role. The data of this research seems to be more in line with the Finnish National Core Curriculum, which instructs students to operate in a global world and encourages international interaction as well as consideration of the local environment (NBE, 2014). The themes these two story lines represent are present in the research data of this study but contrast with the viewpoint of Soini and Birkeland’s study on scientific discourse, where culture was seen as having an instrumental value. Whereas these story lines view culture as a means to an end (sustainability e.g. culture having an instrumental value as an instrument to achieving sustainable future), the research data of this study consists of two separate perspectives with respect to the themes of these two story lines: the first representing the instrumental “culture as” approach as introduced in the author’s previous research and the second representing the “culture in” approach as introduced in the analysis of this article (culture having an independent role in sustainability).

The two remaining story lines, *eco-cultural resilience* and *eco-cultural civilization*, represent the environmental context of the political aspects of CS (Soini & Birkeland, 2014). Eco-cultural resilience seeks a balance between humans and nature. Nature conservation therefore cannot be carried out without taking local livelihood development into consideration. Eco-cultural civilization on the other hand refers to an ecological turn in the values and behaviour of people (Soini & Birkeland, 2014). These narratives, along

with the three previously mentioned narratives, are linked to the instrumental values of culture and cultural change as presented in the “culture as” perspective of CS. Because the “culture as” approach is present in the data of this research (for the need for cultural change towards sustainability, see also Laine, 2013a), it is therefore inevitable to combine both perspectives, the “culture as” approach and the “culture in” approach, in the final description of culturally sustainable education.

To summarize: the data of this study matches Soini and Birkeland’s conservative, communitarian and environmental aspects on CS. It remains open whether the definition of education which promotes CS should in this regard be broadened with a stronger neoliberal approach. In addition, the data of this study differs from Soini and Birkeland’s analysis from the viewpoint of cultural diversity and locality: the rejection of globalization and culture’s instrumental value do not play a similar prominent role. There is also a call for culture’s intrinsic value emerging from the data of this research as presented in the previous chapter when comparing it to Soini and Birkeland’s analysis. Next the possibility of supplementing Soini and Birkeland’s analysis from the perspective of the educational sciences will be discussed so that a definition of culturally sustainable education would be coherent with not only the data of this study and the current discussion concerning cultural sustainability (e.g. Soini and Birkeland’s analysis of the scientific discourse) but supplemented with pedagogical aspects from the viewpoint of the Finnish educational system.

Pedagogical Perspectives on Culturally Sustainable Education

It is important to broaden the examination of CS education beyond normative conceptions and the political context and examine its definition in connection with pedagogical discourses, so that the definition of culturally sustainable education would be coherent with the current discussion on education practice and policies. Therefore in this section the definition of culturally sustainable education in relation to pedagogics will be examined, utilizing anthropologist Fredrik Barth’s (1928-2016) theory of the micro-, median- and macro-levels of culture. The way in which Finnish educational politics, the national core curriculum of basic education and the organization of education and educational practices take into account CS and thus participate in its definition will also be discussed. Through these approaches, a pedagogical level of CS is presented and a definition of culturally sustainable education is reached.

Even though Barth’s model of analysis, which is used in understanding the relations between power, organizational activity and everyday human life, has been created to study ethnicity, the model has been broadly applied in the study of culture (e.g. Siivonen, 2008). In this study, Barth’s theory is used in formulating the visibility and operations of CS on different levels. The micro-level represents the level of individual people, the median-level represents the level of local organization and institutions, and the macro-level represents the level of states, international organizations and institutions. Everyday life happens on the micro-level, in interaction with one’s own environment and the level of symbols, with variation accounted for. Culture on the micro-level is therefore not unified. On the median-level, simplified images of culture are generated. This enables simplifications to be used in the promotion of culture. On the macro-level the conditions for operation, and the possibility of micro- and median level operations, are created. On the macro-level power over the micro- and median-levels are exercised. The median-

level also includes the exercise of power in relation to the micro-level (Barth, 1994; Siivonen, 2008). The exercise of power on the macro- and median-levels does not, however, imply that the relations between different levels are only one-way. In education the requirements of the micro-level guide the decisions on the macro-level and the operations on the median-level. The curriculum, for example, is modified and legislation reformed on the basis of encounters on the micro-level and the requirements arising from them. Also, the organizations and institutions operating on the median-level aim at meeting the requirements of the micro-level. The manifestation of the different levels in culturally sustainable education is described in Figure 1.

Barth's view of the encounters on the micro-level is especially interesting from the viewpoint of educational sciences, for it adds a level where CS is alive and develops in everyday situations and encounters into a discussion of CS alongside of the normative definition. On the level of schools this means turning attention to pupil-pupil, pupil-teacher and teacher-teacher encounters. From Barth's model it can be noticed that CS is defined on the macro- and median-levels, but definitions arising in the micro-level contacts have not yet been studied in education. Topics broadly discussed in educational sciences, such as identity processes (e.g. Benjamin, 2014), pupil encounters (e.g. Talvio, 2014) and other pedagogic decisions, such as the critical pedagogy view of the pupil as an active, world-reforming actor (e.g. Apple, Au & Gandin, 2009) can, on the other hand, be seen as studies of micro-level encounters.

The levels of manifestation of CS on the macro- and median-level, visible in Figure 1, include the perspectives of educational politics, educational administration and organizing education. These viewpoints are utilized in showing what kinds of CS themes have been given specific attention in developing and guiding education. On the macro-level, sustainable development education is mentioned in several normative documents guiding education. The Finnish Government along with the Ministry of Education and Culture are responsible for the planning and execution of educational politics. The Finnish National Board of Education is a department for developing education, which, among other things, decides on the curriculum (NBE).

The memorandum on the reform of Finnish basic education by the Ministry of Education and Culture in Finland states that the future skill requirements are, among other things, understanding the challenges of sustainable development and taking care of the future. From the perspective of the "culture in" approach, the following skill requirements are mentioned: understanding different customs, languages and cultures in a globalizing world, readiness regarding creativity, skills related to self-expression, hand and body skills and being conscious of one's own identity. The Ministry memorandum pays particular attention to multiculturalism – it notes that the increase in the diversity of languages, cultures and religions requires that schoolwork should be supportive of both the construction of a pupil's own cultural identity and his/her participation in Finnish society and a globalizing world. Several statements and expert resolutions in the Ministry memorandum also highlight the increasing importance of cultural and life stance education in the future (MEC, 2010). A presentation on the goals and distribution of lesson hours in basic education, which followed the 2012 memorandum, mention the promotion of sustainable development as a goal of basic education. Socio-cultural sustainability is mentioned, although the confirmed national core curriculum (2014) mentions CS in its own right (MEC, 2012).

In the national core curriculum of basic education 2014, a sustainable way of living is viewed as a necessity. A sustainable future and way of living is shown as a cross-sectional theme in the document. CS is specified as one of the dimensions of a sustainable way of living, and is mentioned in the value base of basic education and the transversal competence goals (NBE, 2014). The “culture in sustainability” approach is present in, for example, the cultural objective of basic education, which defines the objective of basic education as promoting diverse cultural competence and appreciation of one’s cultural heritage, and as supporting pupils in the construction of their own cultural identity and cultural capital. The transversal competence goals mention the construction of one’s cultural identity, too, and cultural competence is selected as one of the seven competence goals. School culture is described as utilizing and appreciating the nation’s cultural heritage and national languages, and one’s own and the surrounding cultural, linguistic, religious and life stance diversity. In the discussion on cultural diversity, the right to one’s own language and culture is noted as being a fundamental right (NBE, 2014). The CS and the “culture in sustainability” perspective are also visible in subjects and the general goals of school grades (for a more specific analysis, see Laine, 2016).

In light of what has been said above, the themes of CS from the viewpoint of educational politics are connected to the learning goals and rights of the individual arising from the societal situation (e.g. globalization, multiculturalism) and values (sustainable ways of living, appreciation of cultural diversity and traditions), and to the societal level as enabling the actualization of rights and the achievement of learning goals. The contents do not contradict the previously introduced results or the scientific-political discourse, but it is noteworthy that the themes of cultural identity, cultural competence and cultural rights particularly stand out. Educational politics is therefore utilized in bringing the individual’s learning requirements, in relation to both personal and societal requirements, into the discussion on CS, so that an attempt is made at meeting the requirements of the micro-level encounters.

Organizing education to promote a sustainable way of living has in Finland been supported by both organizations and the Government (Kestävän kehityksen toimikunnan koulutusjaosto, 2006; ME 2006; see also: Pathan et al., 2012). On the median-level, in 2007 the National Board of Education published a manual on promoting sustainable development in educational institutions. In the manual, the “culture in” approach is visible in taking into account cultural identity, cultural heritage, multiculturalism and local culture (Loukola, 2007). Organizations have also provided concrete tools for promoting culturally sustainable development in education. The OKKA Foundation, which aims at developing education, is in charge of the certification of sustainable development in educational institutions and one of its themes is CS (see www.koulujaymparisto.fi). The Association of Cultural Heritage Education in Finland has published a website, www.kulttuurinvuosikello.fi, promoting culturally sustainable education. The Helsinki Metropolitan Area Reuse Centre has, as part of the 4V project, produced sustainability guides including CS to day care centres, schools and playgrounds (see www.4v.fi). On the median-level, activity that furthers culturally sustainable education includes the culture education provided by municipalities and schools and specifically all activity that is based on the cultural education plans and reaches all pupils equally (see www.kulttuurikasvatussuunnitelma.fi).

MACRO-LEVEL	MEDIAN-LEVEL	MICRO-LEVEL
<ul style="list-style-type: none"> – legislation concerning education – education policy – educational administration and the national core curriculum <p>→ power is used with the help of normative descriptions</p> <p>→ cultural activity, homogeneity and stability as an instrumental goal when pursuing societal peace, wellbeing and economic benefits</p>	<ul style="list-style-type: none"> – NGOs and local agents – municipal and school level curriculums – school administration <p>→ power is used when controlling micro-level functions</p> <p>→ sustaining cultural activity, homogeneity and stability as a goal by deploying macro-level goals and sorting out and answering to micro-level needs</p>	<ul style="list-style-type: none"> – day-to-day encounters in school <ul style="list-style-type: none"> • recognition and actualization of cultural rights • well-balanced development of (cultural)identity • cultural know-how and mastery and support of cultural skills <p>→ these aspects resonate with the definitions of the macro and median-levels, but adjusted in accordance with interactively in day-to-day life</p> <p>→ active structuring of the world and operating in it with relation to others as a goal</p>
<p>→ The effect of the macro-level via the median-level to the micro-level: homogeneity, stability, activity</p>		
<p>The effect of the micro-level via the median-level to the macro-level: heterogeneity, variation, activity ←</p>		

Figure 2. The Appearance of Cultural Sustainability in Education According to Barth’s Levels of Culture (Barth, 1994; Siivonen, 2008)

The Definition of Culturally Sustainable Education

In order that, for example, programmes, certificates, websites and publications aimed at promoting sustainability education – and used by both the teachers and the pupils – cover sustainability from a broad perspective (including cultural sustainability) a definition of culturally sustainable education must be generated. To meet the curriculum requirements for culturally sustainable education, education should take into account, for instance, the diversification of society and the pupil’s individual cultural identity. Education is, however, linked to the information at hand and to existing practices and services. In the research data of this study, the strengthening of one’s own identity and one’s own roots was considered a central development target in educational practices, along with appreciating, treasuring, upholding and maintaining one’s own culture and traditions, while applying them to the present time (e.g. memorandum 2.3). On a societal level, the UN Declaration of Human Rights and the right to one’s own language and culture were mentioned. The societal changes and the significance of an individual’s cultural identity highlighted by educational politics and the educational administration are in line with expressions in the research data concerning the support of the individual’s identity process and societal diversification, which are clearly shown in the subthemes as well. The analysis of the definition of culturally sustainable development therefore

expands the significance of the “culture in” aspect, especially from the perspective of the individual’s development and micro-level encounters. Micro-level encounters raise such questions “Do I enable cultural changes?” or “Whose creativity is accepted and valued?” and “Do I accept critical interpretations of culture?” (see more specifically Laine, 2013a).

By combining the environmental approach that takes into consideration the instrumental value of culture (cultural change) and the CS approach that is in accordance with the pillar model that recognizes the intrinsic value of culture, a definition of culturally sustainable education is arrived at. This definition also resonates with the scientific discourse on CS and with earlier definitions of education that promote CS (Laine, 2013a). To take into consideration pedagogical viewpoints, a definition of culturally sustainable education must also acknowledge the significance of culture in the learner’s identity process. In supporting the identity process, cultural rights and their identification and acknowledgement hold a central role. It is important to note that neither the research data nor the national core curriculum mention cultural identity or cultural heritage as being tied to one specific nationality or, for instance, ethnic background, but is seen as a right of all people.

Taking into consideration the results of the analysis of the research data presented, the comparison of results with the scientific and political discourse presented and the pedagogical factors, the results of the analysis can be summarized thus:

Culturally sustainable education

- is made possible and developed through micro-, median- and macro-level contacts
- takes into account culture on the local, national and global levels
- includes creativity, cultural customs, cultural heritage and an awareness of history, cultural landscapes, interaction between generations, internationality, locality as well as multiculturalism and diversity in education
- supports the identity process of the pupil
- protects and enables the realization of cultural rights
- utilizes the instrumental value of culture and recognizes the value of culture in the cultural change toward sustainability.

This study shows that expert conceptions of culturally sustainable education do not conflict with scientific or pedagogical discourse. This in itself shows the generalizability of the results of this study. It is also interesting to note that the experts’ conceptions did not include the neoliberal dimension, as in the notion that culture is an economic asset (for the commercial use of culture and benefits from tourism and travel, see Siivonen, 2009, and for sustainable design, see Ruokonen, Sepp, Moilanen, Autio & Ruismäki, 2014). It would be possible to apply the commercial aspects of culture in schools with entrepreneurship education and practical subjects. Additionally, there was no specific interest present in the research data to categorize certain contents as preserving and transmitting Finnish culture. This resonates with the idea that is present in the research data, namely that culture is multi-faceted and changing but it is also a local phenomenon. Even though the results do not conflict with scientific and pedagogic discourse, they do show that the educational viewpoint introduces a new dimension into the discussion on CS. It specifically broadens the “culture in” definition from the perspectives of supporting the pupil’s identity processes and micro-level encounters. From a theoretical point of view, the study therefore adds depth to the examination of CS. At the same time, the

results of this study should be exposed to critical review of what the terms used in defining culturally sustainable education, as in multiculturalism and communality, mean from the perspectives of the pupil's identity process, welfare and positive societal development (e.g. for indigenous perspectives, see Chandra, 2014).

Conclusions

The objective of the study, to find a definition for culturally sustainable education, was answered by creating a synthesis of experts' conceptions, earlier research, scientific discourse and pedagogic viewpoints. Through this study, the expectations for education from the viewpoint of CS can be defined more explicitly and in an approachable way. Moreover, Soini and Birkeland's theory of story lines regarding CS is supplemented to take into account micro-level encounters and pedagogics and on the other hand Soini and Birkeland's theory shows that the data from this study could be supplemented with an approach that also considers the commercial possibilities of culture.

Pursuing a sustainable way of living is about broadening the whole educational system's way of thinking, about a new school culture. Without acknowledging the cultural perspective, the pursuit of sustainability fails. Culturally sustainable education considers culture in a broad and diverse way. Thus, an educational institution cannot achieve a good level of CS by taking into consideration only one aspect of CS and disregarding others. Nor can a school achieve a good level of sustainability by only acknowledging one aspect of sustainability. Defining cultural sustainability is pivotal so that education can reach a future-orientated vision of CS that supports the wellbeing of the pupil and society.

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Correspondence concerning this paper should be addressed to Marja Laine, a PhD student, Department of Teacher Education, Faculty of Behavioural Sciences, University of Helsinki, P.O. Box 9, FIN-00014 University of Helsinki, Finland. E-mail: marja.h.laine@gmail.com