Andragoška spoznanja/Studies in Adult Education and Learning, 2021, 27(1), 79-100 UDK: 374.7
DOI: https://doi.org/10.4312/as/9879 Scientific article

Siniša Kušić, Renata Hasel

ADULT EDUCATION TEACHERS' COMPETENCIES FOR THE IMPLEMENTATION OF SUSTAINABLE DEVELOPMENT

ABSTRACT

This paper presents the results of a study conducted on a sample of teachers working in adult education in Croatia with the aim of determining whether they possess the competencies needed for the implementation of sustainable development in the teaching process. The results show that the teachers who participated in the study mostly expressed positive attitudes but lower levels of both knowledge about sustainable development concepts and education for it. Even though teachers on average self-evaluated that they possessed almost every generic and specific competency needed for sustainable development, their self-evaluation also shows that they only partially possess the competencies directly connected with the implementation of sustainable development in the adult education teaching process.

Keywords: *sustainable development, adult education for sustainable development, competencies for sustainable development, adult education teachers' competencies*

KOMPETENCE UČITELJEV ZA IMPLEMENTACIJO TRAJNOSTNEGA RAZVOJA V OKVIRU IZOBRAŽEVANJA ODRASLIH – POVZETEK

Predstavljamo rezultate raziskave, v kateri so sodelovali učitelji s področja izobraževanja odraslih na Hrvaškem. Cilj raziskave je bil ugotoviti, ali imajo ustrezne kompetence za implementacijo trajnostnega razvoja v učnem procesu. Učitelji, ki so sodelovali v raziskavi, so večinoma izrazili pozitiven odnos do trajnostnega razvoja, vendar pa so rezultati pokazali tudi nižjo raven poznavanja konceptov, povezanih s trajnostnim razvojem, ali z njim povezane izobrazbe. Čeprav v povprečju učitelji menijo, da razpolagajo s skoraj vsemi splošnimi ali specifičnimi kompetencami, potrebnimi za trajnostni razvoj, je njihova samoevalvacija pokazala, da le delno razpolagajo s kompetencami, ki so neposredno povezane z implementacijo trajnostnega razvoja v učnem procesu izobraževanja odraslih.

Ključne besede: *trajnostni razvoj, izobraževanje odraslih za trajnostni razvoj, kompetence za trajnosti razvoj, kompetence učiteljev v izobraževanju odraslih*

Siniša Kušić, PhD, Associate Professor, *Department of Education, Faculty of Humanities and Social Sciences, University of Rijeka, skusic@ffri.uniri.hr*

Renata Hasel, mag. paed., *Prva riječka hrvatska gimnazija, renata.hasel@gmail.com*

INTRODUCTION

Despite the increase in research interest and a significant number of scientific papers that examine the topic of sustainable development (SD), this concept is still one of the most inconsistently defined terms today (Rončević & Rafajac, 2012). The most commonly cited definition of SD in the literature (Ličen, 2011; Orlović-Lovren, 2012; Quiroz-Niño & Murga-Menoyo, 2017) comes from *Our Common Future* and defines it as a "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development [WCED], 1987, p. 43). According to this definition, SD implies the concept of needs as well as the idea of limitations that stem from the effects technology and social organisation have on the environment's ability to satisfy present and future needs (WCED, 1987). Correspondingly, other definitions imply the idea of limitation, the fair division of resources and opportunities, as well as understanding of the interconnection between the environment, economy, and society (Martins et al., 2006). In accordance with the previous statement, the concept of SD consists of three dimensions: the environmental, the social, and the economic (Ciegis et al., 2009).

With the aim of achieving environmental, social, and economic sustainability, a new United Nations (UN) development agenda, *Transforming Our World: The 2030 Agenda for Sustainable Development,* was approved (UN, 2015) during the UN Sustainable Development Summit held in September 2015 (Pavić-Rogošić, 2015). Its main framework consists of seventeen Sustainable Development Goals (SDGs). To achieve these global goals, quality education for sustainable development has to be implemented at all education levels (Cebrián et al., 2020; Evans, 2019), including adult education.

ADULT EDUCATION FOR SUSTAINABLE DEVELOPMENT

Education for sustainable development (ESD) represents a dynamic concept that implies a new vision in education with the aim of empowering people of all age groups to take responsibility for the creation of a sustainable future (UNESCO, 2014). In this context, ESD implies adult education programs that encourage the development of skills, values, and attitudes for "tak[ing] informed decisions and responsible actions for environmental integrity, economic viability and a just society" (UNESCO, 2018, p. 38). Quiroz-Niño and Murga-Menoyo (2017) emphasize the fact that adult education programs, aligned with SD principles and values, are essential in achieving the 2030 Agenda goals. However, it is apparent that the vast majority of education programs do not reflect the principles, purposes, and goals of SD (Klapan et al., 2008; Sterling, 2016), and that SD integration in adult education is still slow and insufficient (Orlović-Lovren, 2015).

Even though adult education has been mentioned in more recent documents and initiatives at the international level, it is still insufficiently represented in education policy documents and programs for ESD implementation in the period after 2015. In recent documents (e.g. UN, 2015; World Bank & IMF, 2014) the concept of lifelong learning

is perceived in a very restrictive manner and at its core exclusively focused on the promotion of economic growth (Kušić et al., 2014, 2015; Regimi, 2015) at the expense of education for personal, civil, and sustainable development (Orlović-Lovren, 2012). Apart from promoting economic growth and adult training for the labour market, lifelong learning and adult education, coordinated with SD principles and goals, have to reflect a transformative approach and enable adults to gain competencies needed for active participation in important social matters, encourage the development of skills needed to assert their rights and emancipation as well as promote the importance of their personal and professional development. As part of this approach, adult education teachers are required to act as agents of change (Bentham, 2013; Kušić et al., 2016; Rieckmann & Holz, 2017; UNESCO, 2017; Vukelić, 2020). Not only are teachers expected to teach about SD, but also to, with the encouragement of adult learners, actively participate in activities which contribute to SD as well as to lead sustainable lifestyles (Bentham, 2013).

ADULT EDUCATION TEACHERS' COMPETENCIES FOR SD

In order to lead a sustainable lifestyle, teachers have to possess competencies that promote acting in the direction of SD in certain contexts (Besong & Holland, 2015; Chinnasamy & Daniels, 2019). Thus, competencies for SD could be defined as "complexes of knowledge, skills, and attitudes that enable successful task performance and problem-solving with respect to real-world sustainability problems, challenges, and opportunities" (Wiek, 2010, as cited in Besong & Holland, 2015, p. 7).

Due to the fact that it requires the possession of various competencies, it has been shown that the implementation of SD in education institutions represents a tough challenge for teachers (Bertschy et al., 2013; Borg et al., 2012; Uitto & Saloranta, 2017). The results of various studies show that teachers rarely feel competent enough to teach about SD (Borg et al., 2012). These types of teachers' evaluations are frequently determined by their perception of their knowledge about SD as well as their attitudes and evaluations regarding the importance of ESD – what ESD teachers evaluate as important, i.e., the more they deem they are familiarised with the contents and fields of SD, the higher their self-evaluations regarding readiness and competency for its implementation (Vukelić, 2020).

A study conducted among teachers in Latvian adult education shows that the teachers who participated evaluate the importance of SD highly, express positive attitudes about it and are motivated to implement SD content in their teaching; however, they also feel that they lack the knowledge and skills needed to empower and teach students about it. Only one third of the teachers included in the study believe that they possess the competencies needed to teach about SD (Vintere, 2020), which, along with former theoretical notions and results of other studies, represents a motif for further research on adult education teacher competencies for the implementation of SD.

METHODOLOGY

Research Objective, Aims, and Variables

The aim of this paper is to examine and determine whether teachers in Croatian adult education possess the competencies needed to implement SD in the adult education teaching process. In accordance with the research objective, the following research aims were determined:

- examine adult education teachers' self-evaluation of knowledge and attitudes about SD and ESD;
- examine self-evaluation regarding teachers' possession of generic and specific competencies in ESD;
- determine the existence of statistically significant differences between adult education teachers' self-evaluations and attitudes in regards to independent variables.

In this study, the independent variables are gender, age, field of expertise, length of service in adult education as well as employment status in an adult education institution. The dependent variables are the teachers' attitudes and knowledge regarding SD and ESD, and the competencies of adult education teachers for ESD.

Research Sample

A purposive and convenient sample of teachers employed in various Croatian adult education institutions was used in this study[1]. Out of 165 adult education teachers who participated in the study, only 86 filled in the entire questionnaire[2]. As many as 54 participants withdrew from the questionnaire at its very beginning, which is, along with the small response to the call for participation, a possible indicator of insufficient interest in the topic of SD among adult education teachers.

Table 1
Participant gender

		f	%
Valid	Female	55	64.0
	Male	31	36.0
	Total	86	100.0

Additionally, 64% of female and 36% of male teachers (Table 1), whose average age is 43 (SD=10.35), with ages ranging from 23 to 68 years, participated in the study (Table 2).

1 This study was conducted with teachers since they are the most represented profile of adult education professionals in Croatia and the ones who are directly involved in the teaching process.

2 A lower response rate among teachers employed in adult education institutions to the call for study participation that dealt with SD was noted in Latvia as well, where out of the 139 teachers who participated in the study, only 43 filled in complete questionnaires (Vintere, 2020).

Table 2
Participant age

		f	%
Valid	23 - 29	6	7.0
	30 - 39	31	36.0
	40 - 49	25	29.1
	50 - 59	20	23.3
	60 - 68	4	4.7
	Total	86	100.0

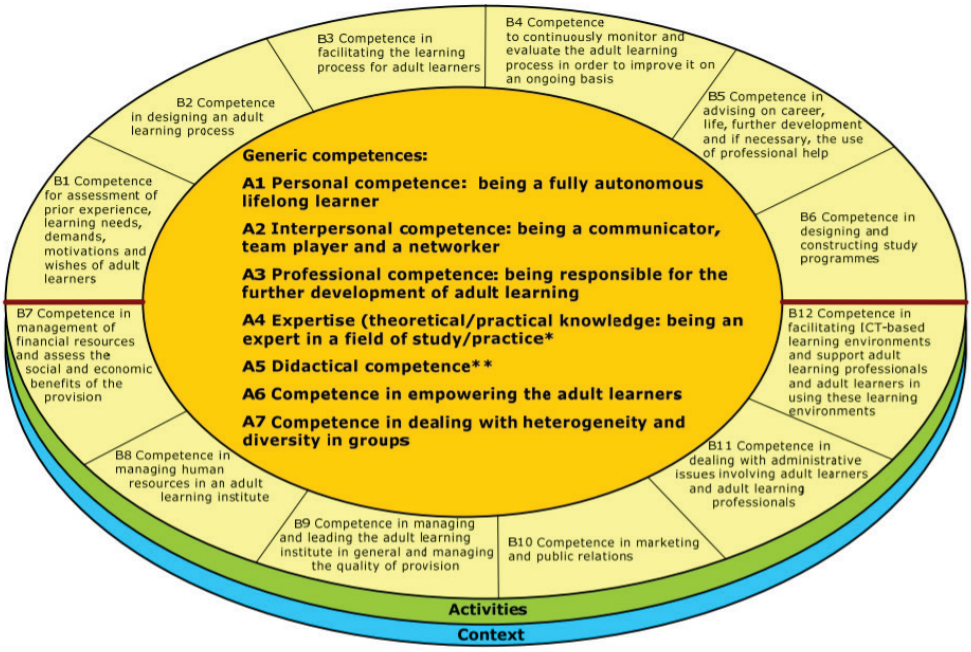
Moreover, 98.8% of the participants are highly educated individuals. A vast majority graduated in social and humanistic studies (68.6%), followed by engineering (19.8%) and a smaller number of participants who graduated in the fields of biomedicine and medicine (5.8%), the biotechnological field (3.5%) and the natural sciences (2.13%). On average, the participants have ten years of service in adult education (SD=8.13), ranging from <1 year to 35 years. Most of the participants are employed full-time (37.2%) and an equal number as part-time (31.4%) and as continuous external associates (30.2%). The subjects taught by teachers are part of both formal (65.1%) and non-formal (47.7%) education programs.

Instruments

The online survey method was used for the purpose of this study. A survey based on relevant SD as well as ESD literature was used in order to gather the necessary data. The attitude evaluation scale items are defined according to the literature (e.g. Grund & Brock, 2020; Mróz et al., 2018), with special adaptation to the adult education context as well as being modelled after instruments developed for the needs of the *Formal Education in Service of Sustainable Development (forOR)* research project. The competency self-evaluation scale items are defined in accordance with recent literature on SD (e.g. Cebrián et al., 2020; Ličen et al., 2017; UNESCO, 2018), based on available (teacher) competencies models in ESD (Bertschy et al., 2013; Sleurs, 2008; UN Economic Commission for Europe, 2011) and formed on the basis of a competencies model for adult learning professionals[3] (Figure 1) (Buiskool et al., 2010; Kušić et al., 2016, 2018).

3 Generic competencies (A1-A7) are required for all adult learning professionals. Specific competencies are not required for all adult learning professionals – a distinction is made between specific competencies directly linked to the learning process (B1-B6) and specific competencies indirectly linked to or supportive of the learning process (B7-B12).

Figure 1
Graphic representation of the set of key competencies of adult learning professionals



* ***For professionals not directly involved in the learning process, the expertise concerns not subject knowledge, but specific (for example managerial, administrative or ICT) expertise.***

** ***For professionals not directly involved in the learning process or supportive in a managerial, administrative way, the didactical competence is less relevant.***

Note. From *Key Competences for Adult Learning Professionals: Contribution to the Development of a Reference Framework of Key Competences for Adult Learning Professionals – Final Report* (p. 11), by B. J. Buiskool, S. D. Broek, J. A. Van Lakerveld, G. K. Zarifis, and M. K. Osborne, 2010, Research voor Beleid.

Based on the previously mentioned references, a total of 28 generic and specific competencies have been defined, which stand out as the most important competencies needed by teachers in adult education for the implementation of SD in the teaching process[4]. Although the competency model proposed by Buiskool et al. (2010) is not primarily aimed at defining competencies for SD, the competencies that stand out as the most important for the implementation of SD in adult education can be classified into the categories provided by this model.

Procedure

The data gathering process lasted between mid-June and the end of August 2020. The Covid-19 pandemic outbreak and March 2020 lockdown, during which all educational

4 The authors of this study focused on generic (A1-A7) and specific competencies directly linked to the learning process (B1-B6) that they consider important, which does not exclude the importance of other generic and specific competencies for SD as well as competencies that may arise from other competency models.

institutions were closed in Croatia, meant that the study could not start until June. The above should be taken into consideration as one of the potential challenges of study participation as well as small participant response. The surveying process took place in three cycles. IBM SPSS Statistics 22 was used for data analysis purposes, while univariate and bivariate statistical methods were used during the analysis. Statistically significant differences in regards to gender were determined by using a t-test for independent samples, whereas one-way analysis of variance (ANOVA) along with the Bonferroni multiple comparison test were used in order to determine statistically significant differences in regards to other independent variables. All tests were conducted at a 5% risk level.

RESULTS AND DISCUSSION

Adult Education Teachers' Attitudes and Knowledge of SD

Teachers' attitudes towards SD as well as their familiarity with this concept were examined using statements about SD. The participants had to express their agreement based on a scale ranging from *strongly disagree (1), disagree (2), neither agree nor disagree, (3) agree (4), strongly agree (5), I do not know (0)* (Table 3).

The results show that the vast majority of participants (94.1%) recognize that SD implies the responsible use of natural resources with the aim of satisfying the current generation's needs while caring about future generations' needs (M=4.45; SD=1.155). More than 90% of the participants agree or strongly agree that for SD, everybody must have access to quality education (M=4.35; SD=0.823), which indicates a high level of awareness about the importance of education in the context of achieving SD. The participants express similar agreement with the statement that for SD, preserving biological, social, economic, and cultural diversity is necessary (M=4.34; SD=1.069).

The participants express higher agreement with the statement that SD requires the reduction of all waste types (M=4.25; SD=0.948) as well as a switch to renewable natural resources (M=4.15; SD=0.790), which indicates that the participants connect SD mostly with the environmental dimension. Additionally, 38.4% claim that SD is the same as environmental protection (M=2.95; SD=1.147), which confirms the fact that SD is still, to a relatively high degree, considered a synonym for environmental protection (Evers, 2005, as cited in Sleurs, 2008). Nevertheless, the participants recognize the importance of both economic and social SD dimensions. In that context, 86.1% agree or strongly agree with the statement that SD contributes to economic development (M=4.13; SD=1.146); similarly, 81.3% agree that SD requires a decrease in social inequality as well as an increase in human rights protection (M=4.08; SD=0.961).

Only more than half of the participants (58.1%) agree or strongly agree with the statement that for SD, people who use their democratic rights are necessary (M=3.60; SD=1.109), whereas 30.2% of the participants neither agree nor disagree with this statement, which indicates that the participants on average recognize the importance of active (democratic) citizenship in the context of SD only to a lesser extent. The participants on average

Table 3
Participants' agreement with statements about SD

Statements	% of answers						M	SD
	1	2	3	4	5	0		
SD is the same as environmental protection	10.5	29.1	22.1	31.4	7.0	0.0	2.95	1.147
SD requires the switch to renewable natural resources	1.2	1.2	14.0	48.8	34.9	0.0	4.15	0.790
SD requires the reduction of all waste types	1.2	3.5	5.8	41.9	46.5	1.2	4.25	0.948
SD implies the responsible use of natural resources with the aim of satisfying the current generation's needs while caring about future generations' needs	1.2	0.0	0.0	26.7	67.4	4.7	4.45	1.155
For SD it is necessary to preserve biological, social, economic, and cultural diversity	1.2	0.0	3.5	37.2	54.7	3.5	4.34	1.069
SD contributes to economic development	3.5	3.5	4.7	41.9	44.2	2.3	4.13	0.961
SD is an idea without concrete content	16.3	62.8	12.8	3.5	3.5	1.2	2.12	0.887
For SD, people who use their democratic rights (e.g. vote during elections, actively participate in social matters and voice their opinions) are necessary	2.3	7.0	30.2	37.2	20.9	2.3	3.60	1.109
SD's aim is to decrease world poverty	1.2	8.1	31.4	36.0	18.6	4.7	3.49	1.196
For SD, everyone has to have access to quality education	1.2	3.5	4.7	40.7	50.0	0.0	4.35	0.823
SD requires a decrease in social inequality and an increase in human rights protection	1.2	3.5	12.8	45.3	36.0	1.2	4.08	0.961
My daily routines and behaviour do not affect sustainability	18.6	51.2	14.0	3.5	12.8	0.0	2.41	1.211
I can influence the change of attitudes in my own environment by setting an example	1.2	1.2	11.6	36.0	46.5	3.5	4.15	1.133

neither agree nor disagree with the statement that SD's aim is to decrease world poverty (M=3.49; SD=1.196), i.e., with the first of the seventeen SDGs. Moreover, only more than half of the participants (54.6%) agree or strongly agree with the previous statement, which further supports the results that suggest that adult education teachers are insufficiently familiar with SDGs (Vintere, 2020).

Furthermore, 69.8% of the participants disagree or strongly disagree with the statement that their daily routines and behaviour affect sustainability (M=2.41; SD=1.211). 82.5% deem that they can influence the change of attitudes in their own environment by their own example (M=4.15; SD=1.133), which indicates their awareness about their own influence and the possibility of personally contributing towards SD. Additionally, 79.1%

express the strongest disagreement with the statement that SD represents an idea without concrete content (M=2.12; SD=0.887), which confirms that the participants have generally positive attitudes towards SD as a concept, a trend which other authors observed in (future) teachers as well (Vukelić et al., 2018; Waltner et al., 2020).

In order to determine statistically significant differences in evaluations between different groups of participants in regards to independent variables, SD statements were tested by using a t-test for independent samples and a one-way analysis of variance for independent samples (ANOVA). Statistically significant difference in agreement with the *SD is the same as environmental protection* statement was found in regards to the participants' age ($F(4.81)=4.461$, $p<0.05$). Participants between the ages of 30 and 39 express higher disagreement with the abovementioned statement (M=2.39; SD=1.174) compared to participants between the ages of 40 to 49 (M=3.48; SD=0.918) as well as those in the 50 to 59 age group (M=3.30; SD=0.979), which was determined by using a post-hoc test of multiple comparisons in pairs (along with the Bonferroni correction method). In this case, age explains the significant percentage (18%) of variation in attitudes towards the mentioned statement ($\eta^2=0.180$).

Statistically significant difference in agreement with the previously mentioned statement between different groups of participants was also found in regards to the teachers' field of expertise ($F(4.81)=3.061$, $p<0.05$). Participants who graduated in the field of humanities express higher disagreement with the statement (M=2.78; SD=1.115) than participants who graduated in engineering (M=3.71; SD=0.920). Medium effect size was determined by η^2 calculation, i.e., field of expertise could explain 13% of the variance in attitude towards the mentioned statement ($\eta^2=0.131$).

In regards to the participants' age, statistically significant difference between different groups of participants was found in agreement with the statement that *for SD, people who use their democratic rights (e.g. they vote during elections, actively participate in social matters and voice their opinions) are necessary* ($F(4.81)=3.170$, $p<0.05$), where participants between 60 and 68 years of age show a statistically significant difference compared to the participants from the 23 to 29, the 30 to 39 as well as the 40 to 49 age groups. By using a post-hoc test, it was determined that participants between 60 and 68 years of age express higher disagreement with the abovementioned statement (M=2.0; SD=1.826) compared to the 23 to 29 group (M=4.17; SD=0.753), the 30 to 39 group (3.68; SD=0.945), as well as the 40 to 49 group (3.80; SD=0.913), where age explains 14% of the variance in attitude towards the mentioned statement ($\eta^2=0.135$). These results show that older adult education teachers are less aware of the importance an active citizenship role has in the context of SD.

In regards to the years of service in adult education variable, statistically significant difference between participants was found in agreement with the statement that *SD requires a decrease of all waste types* ($F(2.82)=4.995$, $p<0.05$). Participants with 6 to 10 years of service express higher agreement with this statement (M=4.75; SD=0.444) compared to

participants with less than 1 to 5 years of service (M=3.94; SD=1.071) as well as participants with 11 or more years of service in adult education (M=4.29; SD=0.938). Years of service explains 11% of the variance in attitudes towards the mentioned statement (η^2=0.109). Statistically significant differences in regards to other groups and variables were not found.

The participants have additionally self-evaluated their knowledge about SD (Table 4). The self-evaluation results about SD show that participants only partially possess knowledge about it, evaluating their knowledge as good on average (M=2.92; SD=0.936). Additionally, almost half (47.7%) of the participants assessed their knowledge about SD as good. Only 3.5% assessed their knowledge as excellent, while 20.9% assessed it as very good. A similar percentage of participants (19.8%) evaluated their knowledge as sufficient, while 8.1% thought that their knowledge is insufficient.

Table 4
Participants' knowledge self-evaluation about SD

		f	%
Valid	insufficient	7	8.1
	sufficient	17	19.8
	good	41	47.7
	very good	18	20.9
	excellent	3	3.5
	Total	86	100.0

The results show that the participants are familiar with the SD concept, however, they possess only partial knowledge and understanding of it, which is in accordance with the results of other studies (Esa, 2010; Vintere, 2020). Also similar to other studies, was the finding that even though adult education teachers have generally positive attitudes to SD, their knowledge about it is still inadequate (Vukelić, 2020).

Adult Education Teachers' Attitudes and Knowledge about ESD

Apart from attitudes towards SD, teachers' attitudes towards ESD have been shown as a key factor for its implementation. Again, a list of statements about ESD in adult education context was used. In order to express their agreement, the participants used a scale ranging from *strongly disagree (1), disagree (2), I do not know/ I am not sure (3), agree (4)* and *strongly agree (5)* (Table 5).

On average, the participants mostly state that adult education teachers should encourage adult learners to connect daily life and work experiences with SD matters on a local level (M=4.09; SD=0.713). Additionally, 90.7% of the participants agree or strongly agree with the statement that adult education institutions should aim towards reaching ESD goals (M=4.06; SD=0.601). A high percentage of participants (71.0%) recognize

Table 5
Participants' agreement with statements about ESD in the adult education context

Statements	% of answers					M	SD
	1	2	3	4	5		
I do not think about ESD	19.8	40.7	26.7	11.6	1.2	2.34	0.965
Adult education institutions should aim towards reaching ESD goals	1.2	0.0	8.1	73.3	17.4	4.06	0.601
Adult education teachers should encourage adult learners to connect daily life and work experiences with SD matters on a local level	1.2	2.3	7.0	65.1	24.4	4.09	0.713
ESD does not represent an efficient framework for solving the sustainability problem	11.6	43.0	37.2	7.0	1.2	2.43	0.834
Controversial and actual matters related to social, economic, and environmental interests have to take a significant place in the adult education teaching process	1.2	4.7	33.7	52.3	8.1	3.62	0.754
ESD topics are too complex for implementation in adult education	12.8	46.5	37.2	2.3	1.2	2.33	0.774
Adult education programs are overloaded with training content, thus leaving no space to include additional SD content	5.8	32.6	34.9	23.3	3.5	2.86	0.960
I play an important role in promoting SD as a teacher	2.3	5.8	20.9	54.7	16.3	3.77	0.877
I would have to skip other units in order to include SD topics in my teaching process	10.5	38.4	27.9	22.1	1.2	2.65	0.979
ESD should be an obligatory subject in faculties' teaching tracks	2.3	3.5	33.7	41.9	18.6	3.71	0.893

the importance of their own role in the context of promoting SD (M=3.77; SD=0.877), which indicates somewhat better results compared to the study conducted by Mróz et al. (2018). They noticed that only a third of the teachers recognize and successfully define the teacher's role in ESD.

However, even though the participants agree that they should encourage adult learners to connect daily life and work experiences with SD matters on a local level, only more than half of them (60.4%) agree or strongly agree that controversial and actual matters regarding social, economic, and environmental interests have to have a significant place in the adult education teaching process (M=3.62; SD=0.754). This result could be explained in part by the teachers' assumptions regarding the program overload in adult education. Therefore, just over a quarter of the participants (26.8%) agree or strongly agree with the statements that adult education programs are overloaded with training contents, thus leaving no space to include additional SD content (M=2.86; SD=0.960), while a significant

percentage (34.9%) self-evaluate that they either do not know or are not sure about it. Additionally, the results of other studies testify to the overload of curricula representing a significant issue during the inclusion of SD in teaching, showing that the majority of teachers evaluate that they lack the time to teach SD due to curricula overload (Martins et al., 2006).

On average, the participants disagree that ESD does not represent an efficient framework for solving the sustainability problem (M=2.43; SD=0.834), that ESD topics are too complex for implementation in adult education teaching process (M=2.33; SD=0.774) as well as with the statement that they do not think about ESD (M=2.34; SD=0.965), which indicates that more than half of the participants recognize the importance of SD implementation in adult education and positive attitudes towards ESD. The abovementioned results are additionally supported by the fact that no less than 60.5% of the participants agree or strongly agree that ESD should be an obligatory subject in faculties' teaching tracks (M=3.71; SD=0.893).

Further analysis sought to determine the existence of statistically significant differences in attitudes towards ESD in regards to independent variables by using a t-test and ANOVA. Statistically significant differences ($t(84)=3.353$; $p<0.05$) were found concerning the statement *I would have to skip other units in order to include SD topics in my teaching process* in terms of gender, with men expressing higher agreement (M=3.10; SD=0.978) compared to women (M=2.40; SD=0.894). The size effect index ($\eta^2=0.11$) indicates that gender explains 11% of the variance in attitudes towards this statement.

Statistical differences regarding this statement were additionally found in regards to the participants' age ($F(4.81)=3.935$, $p<0.05$), with participants in the 60 to 68 age groups showing a statistical difference compared to participants in the 30 to 39 and the 50 to 59 age groups. By using a post-hoc test, it was determined that participants in the 60 to 68 age group express higher disagreement with the mentioned statement (M=1.5; SD=0.577) compared to the 30 to 39 (M=3.06; SD=1.031) as well as the 50 to 59 age group (M=3.15; SD=0.813). Age explains a significant percentage (15%) of variance in attitudes towards the statement in question ($\eta^2=0.153$).

Statistically significant differences ($F(2.82)=5.926$, $p<0.05$) were also found in the participants' agreement with the statement that *adult education institutions should aim towards reaching ESD goals*. Participants who are employed full-time express higher agreement (M=4.28; SD=0.457) with the statement compared to participants who work in adult education institutions as continuous external associates (M=3.77; SD=0.711). Employment status in adult education institutions explains 13% of the variance in attitudes towards this statement ($\eta^2=0.126$).

In regards to employment status in adult education institutions, another statistically significant difference ($F(2.82)=3.886$, $p<0.05$) was found regarding the statement that *adult education teachers should encourage adult learners to connect daily life and work*

experiences with SD matters on a local level. Full-time employed participants express higher agreement (M=4.22; SD=0.659) with this statement compared to participants who work in adult education institutions as continuous external associates (M=3.77; SD=0.765). Employment status in adult education institution explains 9% of the variance in attitudes towards the statement (η^2=0.087). The results showed that full-time teachers in adult education institutions recognize the importance of SD in the adult education context to a greater extent than the other groups.

It is visible that a significant percentage of participants (more than 30%) self-evaluates that they either do not know or are not sure whether they agree or disagree with half of the statements on ESD in the adult education context, which indicates the participants' general lower familiarity with the ESD concept and weaker knowledge about it, something that the results of other studies have also warned about (Mróz et al., 2018). These results are additionally supported by the participants' self-evaluation about ESD (Table 6).

Table 6
Self-evaluation about ESD knowledge

		f	%
Valid	insufficient	19	22.1
	sufficient	21	24.4
	good	36	41.9
	very good	8	9.3
	excellent	2	2.3
	Total	86	100.0

On average, the participants evaluate their knowledge about ESD as lower compared to knowledge about SD – only from the "sufficient" mark to "good" (M=2.45; SD=1.014). Just under a half (41.9%) evaluate their knowledge on ESD as good, a quarter (24.4%) as sufficient, while a similar percentage of teachers (22.1%) evaluate it as insufficient. Only 9.3% of the participants believe they possess very good knowledge about ESD, while only some of them evaluate their knowledge as excellent (2.3%). In accordance with the previously presented results, it is possible to conclude that the participants are only partially familiarised with both SD and ESD concepts, which suggests that additional education about these concepts is needed for adult education teachers.

Adult Education Teachers' Competencies for SD

The participants self-evaluated the possession of a total of 28 generic (Table 7) and specific (Table 8) competencies based on a scale ranging from *I do not possess them at all (1), I possess them to a small degree (2), I possess them partially (3), I possess them to a large degree (4), I possess them completely (5).*

Adult education teachers' generic competencies for SD

On average, the participants self-evaluate that they possess almost all the generic competencies to a large degree, with the highest number (82.5%) self-evaluating that they are competent in respecting adult learners and their various life backgrounds (M=4.17; SD=0.739). More than 80% of the participants self-evaluate that they are completely or to a large degree open to new teaching methods, styles, and techniques for teaching adults (M=4.16; SD=0.733) as well as have the ability to encourage adult learners to actively participate in class (M=4.06; SD=0.741).

More than half of the participants self-evaluate that they completely or to a large degree possess awareness about the social, political, and ethical dimension's existence (M=4.05; SD=0.734), the ability to work as part of an interdisciplinary team (M=3.99; SD=0.694), the ability to encourage innovation, creativity, and critical thinking (M=3.98; SD=0.703), the ability to non-violently solve conflicts/encourage non-violent conflict resolution (M=3.97; SD=0.694), the ability to use methods and techniques to encourage, motivate, and empower adult learners (M=3.91; SD=0.680) as well as the ability to self-reflect in the context of SD (M=3.77; SD=0.663).

It can be concluded that the participants self-evaluate that they completely or to a large degree possess the competencies for using different teaching methods, techniques, and styles in adult learning (didactic competency), interpersonal competency, competency for dealing with diversity and managing group dynamics, competencies for motivating and empowering adult learners as well as personal competency.

However, it is visible that participants on average self-evaluate that they only partially possess competencies directly connected with SD and ESD – the ability to critically reflect on personal professional practice in the ESD context (M=3.44; SD=0.791), the ability to predict and encourage social changes in line with SD (M=3.19; SD=0.847) and the set of knowledge needed to teach about SD topics and content (M=3.02; SD=0.867), i.e., professional competency in the SD context as well as theoretical and practical knowledge about SD (Table 7), which is similar to the results of others studies (Borg et al., 2012; Vukelić et al., 2018).

Further analysis sought to determine statistically significant differences in the self-evaluation of possessing competencies among different groups of participants. In regards to age, a statistically significant difference was found in the self-evaluation of possessing the *ability to connect subject contents with sustainable development content* ($F(4.81)=2.597$, $p<0.05$), where participants in the 30 to 39 age group possess the mentioned competency to a lesser extent (M=3.13; SD=0.718) compared to participants in the 50 to 59 age group (M=3.80; SD=0.834). Age explains 11% of the variance in attitude towards the abovementioned competency ($\eta^2=0.114$). Differences between other groups were not found.

Additionally, a statistically significant difference was found in the self-evaluation of possessing the *set of knowledge needed to teach about SD topics and content* in regards to

Table 7
Adult education teachers' generic competencies for SD

*	Competencies	% of answers					M	SD
		1	2	3	4	5		
A7	Respecting adult learners and their various life backgrounds	0.0	1.2	16.3	46.5	36.0	4.17	0.739
A5	Openness to new teaching methods, styles, and techniques for teaching adults	0.0	2.3	12.8	51.2	33.7	4.16	0.733
A5	The ability to encourage adult learners to actively participate in class	0.0	2.3	17.4	52.3	27.9	4.06	0.741
A3	Awareness of social, political, and ethical dimension's existence	0.0	1.2	20.9	50.0	27.9	4.05	0.734
A2	Ability to work in an interdisciplinary team	0.0	0.0	24.4	52.3	23.3	3.99	0.694
A6	Ability to encourage innovation, creativity, and critical thinking	0.0	1.2	22.1	54.7	22.1	3.98	0.703
A7	Ability to non-violently solve conflicts/ encourage non-violent conflict resolution	0.0	1.2	22.1	55.8	20.9	3.97	0.694
A6	Ability to use methods and techniques for encouragement, motivation, and empowerment of adult learners	0.0	0.0	27.9	53.5	18.6	3.91	0.680
A1	Ability to self-reflect (knowing and understanding your own emotions, behaviours, habits, values, and tendencies) in the context of SD	0.0	0.0	36.0	51.2	12.8	3.77	0.663
A1	Ability to critically reflect on personal professional practice in ESD context	0.0	8.1	50.0	31.4	10.5	3.44	0.791
A4	Ability to connect subject content with SD content	1.2	12.8	43.0	36.0	7.0	3.35	0.837
A3	Ability to predict and encourage social changes in line with SD	2.3	15.1	50.0	26.7	5.8	3.19	0.847
A4	Set of knowledge needed to teach about SD topics and content	2.3	25.6	43.0	25.6	3.5	3.02	0.867

Note. The column with * refers to the generic competencies label (A1-A7) (Buiskool et al., 2010).

years of service in adult education ($F(2.83)=3.139$, $p<0.05$). Participants with 6 to 10 years of service show a statistically significant difference compared to participants with 11 or more years of service, where participants with 6 to 10 years of service possess the mentioned competence to a lesser extent compared to participants with 11 or more years of service ($M=3.26$; $SD=0.999$). Participants' years of service explains 7% of the variance in the self-evaluation of possessing the mentioned competency ($\eta^2=0.070$). These

results show that relatively older teachers and those with more years of service in adult education feel more competent teaching about SD topics and content as well as connect these contents with the contents of the subject they teach.

Adult education teachers' specific competencies for SD

Similarly to the self-evaluation of generic competencies, the participants on average self-evaluate that they to a large degree possess most of the listed competencies (Table 8), where more than 80% of the participants self-evaluate that they completely or to a large degree have the ability to implement modern technology in teaching (M=4.14; SD=0.785), the ability to lead and encourage adult learners to study independently (M=4.09; SD=0.697) and the ability to connect daily life with the subject's contents (M=4.08; SD=0.733). It is encouraging that a relatively high percentage of participants (76.7%) self-evaluate that they are open to innovation and changes in teaching, which represents one of the key preconditions for the implementation of SD content in adult education teaching and one of the virtues of teachers as the agents of change (Kušić et al., 2016; Van der Heijden et al., 2015).

Table 8
Adult education teachers' specific competencies for SD

*	Competencies	% of answers					M	SD
		1	2	3	4	5		
B3	Ability to implement modern technology in teaching	0.0	2.3	17.4	44.2	36.0	4.14	0.785
B3	Ability to lead and encourage adult learners to study independently	0.0	1.2	16.3	54.7	27.9	4.09	0.697
B6	Ability to connect daily life with subject's contents	0.0	3.5	12.8	55.8	27.9	4.08	0.739
B2	Openness to innovation and changes in teaching	0.0	1.2	22.1	46.5	30.2	4.06	0.757
B3	Flexibility in coordinating or changing of the learning process in line with the needs and development of adult learners	0.0	0.0	24.4	50.0	25.6	4.01	0.711
B1	Ability to evaluate and respect adult learners' different needs	0.0	0.0	29.1	46.5	24.4	3.95	0.734
B4	Ability to use various (alternative) methods of monitoring and evaluating the learning process of adult learners	0.0	2.3	32.6	50.0	15.1	3.78	0.726
B1	Knowledge about adult learners' cultural, social, and religious backgrounds with the aim of developing and motivating adult learners	0.0	2.3	34.9	46.5	16.3	3.77	0.746

*	Competencies	% of answers					M	SD
		1	2	3	4	5		
B3	Ability to use appropriate didactical methods, styles, and techniques to teach about sustainable development topics	0.0	5.8	33.7	41.9	18.6	3.73	0.832
B5	Ability to counsel adult learners about their careers, job, and future personal development	2.3	7.0	39.5	36.0	15.1	3.55	0.916
B2	Ability to plan teaching process in line with humanistic principles	0.0	11.6	38.4	38.4	11.6	3.50	0.851
B4	Skills to conduct action studies with the purpose of improving adult education teaching process	4.7	12.8	41.9	31.4	9.3	3.28	0.966
B1	Ability to connect adult learners' previous experiences and knowledge with ESD goals	2.3	11.6	48.8	30.2	7.0	3.28	0.849
B2	Ability to plan and create curriculum containing sustainable development outcomes and contents	4.7	14.0	4.7	23.3	10.5	3.21	0.972
B6	Ability to plan and create curriculum based on transformative learning theory (transformative learning implies the change in adult learners' attitudes and habits)	35	18.6	46.5	22.1	9.3	3.15	0.952

Note. The column with * refers to the specific competencies label (B1-B6) (Buiskool et al., 2010).

More than half of the teachers self-evaluate that they completely or to a large degree possess flexibility in coordinating or changing the learning process in line with the needs and development of adult learners (M=4.01; SD=0.711), the ability to evaluate and respect adult learners' different needs (M=3.95; SD=0.734), the ability to use various (alternative) methods of monitoring and evaluating the learning process of adult learners (M=3.78; SD=0.726), the knowledge about adult learners' cultural, social, and religious backgrounds with the aim of developing and motivating adult learners (M=3.77; SD=0.746), the ability to use appropriate didactical methods, styles, and techniques to teach about SD topics (M=3.73; SD=0.832), the ability to counsel adult learners about their careers, job, and future development (M=3.55; SD=0.916) and the ability to plan the teaching process in line with humanistic principles (M=3.50; SD=0.851).

On the other hand, the teachers self-evaluate that they only partially possess the skills needed to conduct action studies with the purpose of improving the adult education teaching process (M=3.28; SD=0.966) as well as the ability to connect adult learners' previous experience and knowledge with ESD goals (M=3.28; SD=0.849), i.e., competencies connected with the self-evaluation of adult learners' educational needs in the SD context as well as evaluation with the aim to improve the learning process.

The two competencies which the teachers self-evaluated as ones they possess to a lesser extent compared to other competencies are essential for the implementation of SD content in adult education teaching – the ability to plan and create curriculum containing SD outcomes and contents (M=3.21; SD=0.792) and the ability to plan and create curriculum based on transformative learning theory (M=3.15; SD=0.952), i.e., competencies connected with the creation of learning processes and programs about SD. Moreover, only a third of the participants self-evaluate that they completely or to a large degree possess the abovementioned competencies, which indicates a need to encourage the development of these competencies among adult education teachers in order for them to become competent in implementing SD in their teaching.

Variance analysis determined a statistically significant difference in participants' answers in self-evaluation of the *ability to connect adult learners' previous experience and knowledge with ESD goals* in regards to the participants' age and years of service in adult education. In regards to age ($F(4.81)=4.006$, $p<0.05$), a statistically significant difference was found between participants from the 40 to 49 age group and those from the 50 to 59 age group, where participants from the 40 to 49 age group self-evaluate that they possess the mentioned competency to a lesser extent (M=2.88; SD=0.971) compared to participants from the 50 to 59 age group (M=3.80; SD=0.696). Age explains 17% of the variance in possessing this competency ($\eta^2=0.165$).

In regards to years of service in adult education ($F(2.83)=4.064$, $p<0.05$), a statistically significant difference was found between participants with 6 to 10 years of service and participants with 11 or more years of service. Moreover, the participants with 6 to 10 years of service self-evaluate that they possess the mentioned competency to a lesser extent (M=2.85; SD=0.671) compared to participants with 11 or more years of service (M=3.52; SD=0.996). Years of service explains 9% of the variance in possessing the abovementioned competency ($\eta^2=0.089$). Similar to the self-evaluation of possessing the ability to connect the subject's contents with SD content and the knowledge needed to teach about topics and content connected with SD, relatively older teachers as well as teachers with more years of service in adult education self-evaluate themselves as more competent in connecting adult learners' previous experiences and knowledge with ESD goals.

CONCLUSION

In recent years, adult education has been recognized more and more as one of the keys to reaching the SDGs. Yet insufficient attention is given to the implementation of SD in adult education. The successful implementation of SD in adult education is mostly in the teachers' hands, and in order to successfully implement it, teachers need to possess a set of various competencies. This is the reason why the implementation of this concept has been challenging, as teachers frequently self-evaluate themselves as insufficiently competent to teach about SD.

Based on the results obtained in the study, which was conducted on a sample of teachers employed in Croatian adult education institutions, it can be stated that the teachers who participated are familiar with the concept of SD. Additionally, they recognize the importance of their own role in the context of promoting SD as well as the importance adult education institutions play in achieving ESD goals. The teachers who participated in the study generally have positive attitudes towards SD and ESD, but they only possess basic knowledge of these concepts. The teachers self-evaluate their knowledge about SD as good, while their knowledge about ESD ranges from sufficient to good, indicating the need to ensure that adult education teachers get enough opportunities for additional learning and professional training in SD and ESD fields.

Furthermore, the study shows that the teachers completely or in large part possess almost all the generic and specific competencies for SD, but they only partially possess the competencies that are directly connected with it – professional competency in the context of SD as well as theoretical and practical knowledge about SD. The teachers' self-evaluations show that they possess the two competencies that are essential for the implementation of SD content in adult teaching – competencies in creating learning processes incorporating SD and programs about SD – to a lesser extent compared to other competencies, which indicates the need to further empower teachers in this direction.

Even though the results of this study, due to certain methodological restrictions (purposive and convenient sample, i.e., the small number of participants, the selection of competencies for SD according to the competencies model for adult learning professionals), do not allow for generalisations, they can serve as a source of information needed to identify certain challenges and opportunities in terms of SD implementation in adult education. As only a small number of scientific papers examines this area in the context of education, we hope that this one will represent a valuable addition to the understanding of SD implementation in adult education as well as provide assistance in identifying future research directions.

Financing

This work has been partially supported by the University of Rijeka [project number uniri drustv-18-124/1263, as part of the Andragogues and Education for Sustainable Development project] and partially supported by the Croatian Science Foundation [grant number 2031, as part of the Formal Education in Service of Sustainable Development project].

REFERENCES

Bentham, H. (2013). Clearing the path that has been laid: A conceptualisation of education for sustainable development. *Journal of Teacher Education for Sustainability*, *15*(2), 25–41. https://doi.org/10.2478/jtes-2013-0009

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

Besong, F., & Holland, C. (2015). The Dispositions, Abilities and Behaviours (DAB) Framework for Profiling Learner's Sustainability Competencies in Higher Education. *Journal of Teacher Education for Sustainability*, *17*(1), 5–22. https://doi.org/10.1515/jtes-2015-0001

Borg, C., Gericke, N., Höglund, H. O., & Bergman, E. (2012). The barriers encountered by teachers implementing education for sustainable development: Discipline bound differences and teaching traditions. *Research in Science & Technological Education*, *30*(2), 185–207. https://doi.org/10.1080/02635143.2012.699891

Buiskool, B. J., Broek, S. D., Van Lakerveld, J. A., Zarifis, G. K., & Osborne, M. (2010). *Key Competences for Adult Learning Professionals. Contribution to the Development of a Reference Framework of Key Competences for Adult Learning Professionals - Final Report.* Research voor Beleid.

Cebrián, G., Junyent, M., & Mulà, I. (2020). Competencies in Education for Sustainable Development: Emerging Teaching and Research Developments. *Sustainability*, *12*(1), 579 –588. https://doi.org/10.3390/su12020579

Chinnasamy, J., & Daniels, J. (2019). The Role of Universities and Educators in Developing and Implementing Sustainable Developmental Goals. *Studies in Adult Education and Learning*, *25*(3), 47–60. https://doi.org/10.4312/as.25.3.47-60

Ciegis, R., Ramanauskiene, J., & Martinkus, B. (2009). The Concept of Sustainable Development and its Use for Sustainability Scenarios. *Engineering Economics*, *2*(1), 28–37.

Esa, N. (2010). Environmental knowledge, attitude and practices of student teachers. *International Research in Geographical and Environmental Education*, *19*(1), 39–50. https://doi.org/10.1080/10382040903545534

Evans, R. (2019). Education 2030 & Adult Learning: Global Perspectives and Local Communities – Bridges or Gaps? *Studies in Adult Education and Learning*, *25*(3), 3–21. https://doi.org/10.4312/as.25.3.3-21

Grund, J., & Brock, A. (2020). Education for Sustainable Development in Germany: Not Just Desired but Also Effective for Transformative Action. *Sustainability*, *12*(1), 1–20. https://doi.org/10.3390/su12072838

Klapan, A., Vrcelj, S., & Kušić, S. (2008). Cjeloživotno učenje i održivi razvoj – potreba redizajniranja odgojno-obrazovnih programa. In V. Uzelac & L. Vujičić (Eds.), *Cjeloživotno učenje za održivi razvoj - Svezak 1* (pp. 287–292). Sveučilište u Rijeci, Učiteljski fakultet u Rijeci.

Kušić, S., Vrcelj, S., & Klapan, A. (2014). (Ne)obrazovni i (ne)odgojni ishodi obrazovanja. In N. Hrvatić, A. Lukenda, S. Pavlović, V. Spajić-Vrkaš, & M. Vasilj (Eds.), *Pedagogija, obrazovanje i nastava – Svezak 1* (pp. 419–429). Fakultet prirodoslovno-matematičkih i odgojnih znanosti Sveučilišta u Mostaru.

Kušić, S., Vrcelj, S., & Klapan, A. (2015). Adults and "knowledge society". In E. Juhász, V. Tomášová, & E. Petlák (Eds.), *The Social Role of Adult Education in Central Europe* (pp. 83–93). University of Debrecen, Department of Andragogy & Association for Development of Adult Education.

Kušić, S., Vrcelj, S., & Zovko, A. (2016). *Didaktičke odrednice obrazovanja andragoga - komparativni pristup*. Filozofski fakultet u Rijeci.

Kušić, S., Zovko, A., & Vrcelj, S. (2018). Andragogical competencies. In M. Demir (Ed.), *The Proceedings & Abstracts of ICONASH 2018 Antalya* (str. 23–29). ICSER-International Center of Social Sciences & Education Research.

Ličen, N. (2011). Učenje za spremembe v trajnostno naravnani skupnosti. In N. Ličen & B. Bolčina (Eds.), *Neformalno izobraževanje za trajnostni razvoj* (p. 24–29). Ljudska univerza Ajdovščina.

Ličen, N., Findeisen, D., & Fakin Bajec, J. (2017). Communities of Practice as a Methodology for Grassroots Innovation in Sustainable Adult Education. *Studies in Adult Education and Learning*, *23*(1), 23–39. https://doi.org/10.4312/as.23.1.23-39

Martins, A. A., Mata, T. M., & Costa, C. A. V. (2006). Education for sustainability: Challenges and trends. *Clean Technologies and Environmental Policy*, *8*, 31–37. https://doi.org/10.1007/s10098-005-0026-3

Mróz, A., Tomczyk, L., Ocetkiewicz, I., & Walotek-Ściańska, K. (2018). Teachers' Knowledge on Education for Sustainable Development – Polish Context. *Croatian Journal of Education: Hrvatski časopis za odgoj i obrazovanje*, *20*(3), 1001–1028. https://doi.org/10.15516/cje.v20i3.3252

Orlović-Lovren, V. (2012). Koncept održivog razvoja i doživotnog učenja – dva okvira za jedan pogled na obrazovanje odraslih. *Andragoške studije*, *1*(1), 9–22.

Orlović-Lovren, V. (2015). Integrating Sustainability into the Curriculum of Adult Education Studies: A Journey Across Disciplines. In W. Leal Filho, L. Brandli, O. Kuznetsova, & A. Paço (Eds.), *Integrative Approaches to Sustainable Development at University Level, World Sustainability Series* (pp. 307–320). Springer International Publishing. https://doi.org/10.1007/978-3-319-10690-8_21

Pavić-Rogošić, L. (2015). *Novi izazov: Globalni ciljevi održivog razvoja do 2030.* ODRAZ- Održivi razvoj zajednice.

Quiroz-Niño, C., & Murga-Menoyo, M. Á. (2017). Social and Solidarity Economy, Sustainable Development Goals, and Community Development: The Mission of Adult Education & Training. *Sustainability*, *9*(1), 2164–2180. https://doi.org/10.3390/su9122164

Regimi, K. D. (2015, June 9–11). *Adult Education and Sustainable Development Goals* [Paper presentation]. Annual Conference of CASAE/ACÉÉA, Université de Montréal, Québec, Canada.

Rieckmann, M., & Holz, V. (2017). Verankerung von Bildung für nachhaltige Entwicklung in der Lehrerbildung in Deutschland. *Der Pädagogische Blick. Zeitschrift für Wissenschaft und Praxis in pädagogischen Berufen*, 25(*1*), 4–18.

Rončević, N., & Rafajac, B. (2012). *Održivi razvoj: Izazov za sveučilište?* Filozofski fakultet u Rijeci.

Sleurs, W. (2008). *Competencies for ESD (Education for Sustainable Development) teachers. A framework to integrate ESD in the curriculum of teacher training institutes*. ENSI.

Sterling, S. (2016). A Commentary on Education and Sustainable Development Goals. *Journal of Education for Sustainable Development*, *10*(2), 208–213. https://doi.org/10.1177/0973408216661886

Uitto, A., & Saloranta, S. (2017). Subject Teachers as Educators for Sustainability: A Survey Study. *Education Sciences*, *7*(1), 2–19. https://doi.org/10.3390/educsci7010008

UN. (2015). *Transforming our world: the 2030 Agenda for Sustainable Development*. https://sdgs.un.org/2030agenda

UN Economic Commission for Europe. (2011). *Learning for the future: Competencies in Education for Sustainable Development*. UNECE.

UNESCO. (2014). *Shaping the future we want: UN Decade of Education for Sustainable Development (2005–2014): Final report.* UNESCO.

UNESCO. (2017). *Education for Sustainable Development: Learning Objectives*. UNESCO.

UNESCO. (2018). *Issues and trends in Education for Sustainable Development.* UNESCO.

Van der Heijden, H. R. M. A., Geldens, J., Beijaard, D., & Popeijus, H. L. (2015). Characteristics of teachers as change agents. *Teachers and Teaching*, *21*(6), 1–19. https://doi.org/10.1080/13540602.2015.1044328

Vintere, A. (2020, May 12–15). *Case study on sustainable attitude for environment in adult education* [Paper presentation]. 21th International Scientific Conference: Economic Science for Rural Development 2020, Jelgava, Latvia.

Vukelić, N. (2020). Odrednice spremnosti (budućih) nastavnika na obrazovanje za održivi razvoj. *Napredak*, *161*(1–2), 141–161.

Vukelić, N., Rončević, N., & Vinković, A. (2018, October 5). *Jesu li budući nastavnici spremni za održivi razvoj u nastavi?* [Paper presentation]. 2. Međunarodna znanstveno-stručna konferencija: Ka novim iskoracima u odgoju i obrazovanju, Sarajevo, BIH.

Waltner, E-M., Scharenberg, K., Hörsch, C., & Rieß, W. (2020). What Teachers Think and Know about Education for Sustainable Development and How They Implement it in Class. *Sustainability*, *12*(4), 1690–1705. https://doi.org/10.3390/su12041690

World Bank & IMF (2014). *Global Monitoring Report 2014/2015: Ending Poverty and Sharing Prosperity*. World Bank Publications.

World Commission on Environment and Development. (1987). *Our common future: Report of the World Commission on Environment and Development*. Oxford University Press.