

Evaluation of active learning in higher education teaching

Znanstveni članek

UDK 378.091.313

KLJUČNE BESEDE: aktivno učenje, visokošolsko izobraževanje, študenti, evalvacija

POVZETEK – Cilj študije je bil raziskati pedagoška načela in razvojne determinante aktivnega učenja ter kazalce kakovosti in učinkovitosti. Poudarek je bil na evalvaciji učenja in poučevanja pri seminarskih vajah iz Didaktike, ki je organizirana sodelovalno, vključenih pa je bilo 27 študentov študijskega programa Pedagogika. Namen je bil pridobiti vpogled v učinkovitost in determinante razvoja aktivnega učenja s formativno, diagnostično in sumativno evalvacijo (320 ocen). Rezultati so pokazali, da se aktivno učenje večinoma odraža v timskem delu in njegovem strukturiranju, v spodbujanju razvoja kritičnega mišljenja, ustvarjalnosti, radovednosti, v razvijanju refleksije in (samo)kritike, kot tudi v interesu za vsebino in uporabi naučenega. Upoštevali smo individualni pristop in dejstvo, da skoraj četrtina anketiranih študentov za aktivno sodelovanje potrebuje dalj časa in dodatne spodbude, vpetost in pobudo v razredu, kar pa je v pedagoški praksi pogosto prezrto ali celo zanemarjeno, čeprav dejansko predstavlja sestavni del izobraževalnega procesa.

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KEYWORDS: active learning, higher education teaching, students, evaluation

ABSTRACT – The aim of the study was to explore the pedagogical principles and development determinants of active learning, and the indicators of its quality and effectiveness. It focuses on the evaluation of learning and teaching in Didactics seminar classes, organised on a cooperative basis with the participation of 27 students of undergraduate studies in Pedagogy. The intention was to gain an insight into the effectiveness of active learning and its development determinants with the formative, diagnostic and summative evaluation (320 assessments). The results showed that active learning was mostly reflected in teamwork and its structuring, in stimulating the development of critical thinking, creativity, curiosity, reflexivity and (self-) criticism, as well as in the preference of contents and applications of lessons learned. Individual approach was respected as well as the fact that nearly a quarter of the surveyed students need a longer time and additional incentives for active contribution, involvement and initiative in the classroom, which is often neglected in educational practice but actually an integral part of the educational process.

1. Introduction

The choice of teaching methods and strategies in higher education is an important determinant of contemporary education. Unlike the traditional learning methods, based on the transmission of knowledge, contemporary teaching methods allow for active involvement of students in the teaching process and its evaluation. It is still believed for the higher education teaching that it has to be of the so-called lecturing nature and that this actually reflects its higher scientific level. It even used to be con-

sidered that didactic knowledge applies only to schools, but not the college environment (Bognar, 2006, p. 7).

Knowledge has been rapidly becoming obsolete: new scientific information has been accumulating rapidly in all fields of science, and the students will be able to develop them further more optimally if they are trained for easy, fast, efficient and continuous learning. One of the prerequisites for such desirable development is putting students and their holistic development in the centre of the educational process, considering different needs, interests and development determinants of each individual, which requires continuous and formative evaluation of students' progress in the learning process. Formative evaluation includes all the participants in the educational process. In university teaching, these are mostly professors, their assistants and students. The analysis and evaluation of the teaching process provides for the improvement of its quality (Bognar & Matijević, 2002). In this context, Brown et al. (2003) emphasise the importance of creating a climate that will encourage students to reflect on the teaching process.

In addition to formative evaluation, Scriven (1966) emphasises the importance of summative evaluation in education. According to Bognar and Matijević (2002), summative evaluation involves the evaluation of educational achievements at the end of a given course, a teaching semester or a year. Summative evaluation rarely completely relies on the data collected by the qualitative research; nevertheless, the qualitative approach to summative evaluation does give the data a certain depth, detail, as well as refinement to the quantitative data.

The evaluation of active learning in higher education teaching, being the topic of this paper, indicates the unity of the processes of learning and teaching, their interdependence and complementarity. The overall education process, from the theoretical standpoints, is viewed as interactive communication with the key question: how to plan, model, implement, and evaluate teaching in which students will be as active as possible? This paper has tackled these challenges by evaluating the effects of active learning through 13 seminar sessions with students, organised in the winter semester of the academic year 2013/2014 in the Didactics (teaching methodology) seminar classes.

Active learning, set as an imperative of contemporary education, implies the knowledge of effective learning, critical thinking, and the creation of the need for learning as a lifelong and ongoing process. Although the benefits of active learning have been vastly proven and researched (Taylor, 2000; Nikčević-Milković, 2004; Machemer & Crawford, 2007; Cavanagh, 2011), traditional teaching is still prevalent in the educational practice.

Kyriacou (2001) points out that active learning involves activities in which the participants are provided a high degree of autonomy and control over the organisation and the course of activity. Such activities usually include problem solving and research, and can be individualised or expanded into collaboration. Previšić (2007) defines teaching as an organised process of active and partnership-like acquisition

of knowledge in institutional and non-institutional environment. This has been supported by the results of a number of studies, including the study conducted by Jurčić (2012), the results of which indicate insufficient participation of students in the lessons structuring.

Buljubašić-Kuzmanović (2007) also points out that there is still a lot of misunderstanding and mistrust in educational practice with regard to the teaching methodology concepts of experiential, problem, group and cooperative teaching that take integrative learning as a principle of action. Active learning in higher education teaching has been less researched in comparison to primary and secondary schools. Nevertheless, the research conducted has shown positive effects. In their research, Klarin (1998) and Nikčević-Milković (2004) concluded that students who learn in an active way express significantly higher satisfaction with teaching than those who are taught in a traditional way. Greene (1996) states that 90 of what one learns is the result of learning by experience which necessarily involves active participation of the individual.

As a phenomenon and a pedagogical concept, evaluation has always aroused the attention of various experts in the field of docimology (Jordan, 1953; Wrightstone et al., 1956; Pidgeon & Allen, 1974; Grounlund, 1985; Grounlund & Linn, 1990; Logar, 1990; Matijević, 2004). From the docimology and didactics point of view, it is important to conduct formative, normative and summative evaluations (Kyriacou, 2001). Experts also talk about the diagnostic evaluation, which overlaps with formative or diagnostic evaluation which specifically identifies learning difficulties. Likewise, both initial and summative evaluation are considered to be an integral part of formative evaluation, depending on which “initial” level of achievement the current achievement is assessed, and the differences at the beginning and at the end of the learning process.

Formative evaluation refers to the assessment of educational process, and summative evaluation refers to the assessment of educational achievements. Whereas the purpose of formative evaluation is to provide an opportunity for students/pupils to receive feedback on their progress (and is process oriented), the purpose of summative evaluation is to assign a grade and thereby rank the knowledge of the students/pupils (result oriented). More specifically, formative evaluation helps the students to identify their strengths, weaknesses and target areas that should be further developed. In the context of higher education, the above mentioned is pointed out by Nicol & Macfarlane-Dick (2006) whose research confirmed that in higher education, formative evaluation and feedback should be used to empower students as self-regulated students. It involves teaching in which students manage their learning and metacognitive processes including the self-regulation of the learning process, i.e. the modification of procedures in case of difficulty in achieving the set goals.

As the study included students of the third year of the double major study programme in Pedagogy and different teaching specialisations (History, Philosophy, Croatian Language and Literature, English Language and Literature, German Language and Literature), the learning was achieved through multidisciplinary, interdis-

ciplinary and transdisciplinary topics related to active teaching, in which different strategies of education were applied and their effects evaluated. The seminar topics were initially developed based on the start-off literature (Terhart, 2001; Marzano et al., 2005; Mattes, 2007), and were then further elaborated by the student leaders of individual topics with the help of the teaching assistant.

2. Methodology

Using formative, diagnostic and summative evaluation, the aim of this study was to explore the pedagogical principles and development determinants of active teaching, and the indicators of its quality and effectiveness. Deriving from the stated aim, the following research problems were defined:

- to conduct the formative, and, thereby, diagnostic evaluation of all the 13 topics of active learning discussed over 13 seminar sessions with students, and to compare the differences in the assessments given by the students, student leaders and the teaching assistant;
- to conduct the final evaluation of active teaching and analyse which of its principles, development guidelines, indicators of quality and efficiency were (in)sufficiently stimulated and developed during the learning process, as a roadmap for future work and learning.

The study included 27 students of the third year of the undergraduate double major study in Pedagogy at the Faculty of Humanities and Social Sciences in Osijek. All students, student leaders and the teaching assistant assessed the teaching and learning process (formative evaluation) 13 times. Afterwards, the students gave one more assessment again at the very end of learning (summative evaluation). Altogether 320 assessments (256 by students, 27 by student leaders, 13 by the teaching assistant and 24 final assessments) were performed. The differences in the students' assessments with respect to gender were not taken into account as the sample consisted from predominantly female population.

For the purposes of this study, two questionnaires were designed (adapted in accordance with Tečić, 2006; Bezinović et al., 2010), one for the formative and another for the summative evaluation. The formative evaluation consisted of two scales: the first scale with a total of 15 items focused on the student leaders of each session – their skills, personal involvement and initiative in active learning and teaching. The other scale, with a total of six items, focused on the elements of active teaching (relevance, applicability, user-friendliness, transparency, coherence and personal contribution). The task of the students, student leaders and the teaching assistant was to evaluate the effects of active learning on a Likert-type scale from 1 to 6, where number one represented the smallest, minimal impact, and number six, the maximum impact. The summative evaluation consisted of four scales. The first focused on the assessment

of pedagogical principles of active learning (12 items), the second focused on the assessment of its development determinants (14 items), the third referred to the quality indicators (13 items), and the fourth to the effectiveness (14 items).

Same as in the formative evaluation, the students were asked to assess the effects of active teaching on a scale from 1 to 6. The aim of the final assessment was to get an answer to the question which determinants of active learning were “sufficiently” stimulated and developed in teaching, and which “insufficiently”, or which seek additional incentives. Due to the fact that the assessments of one and two at the scale of six degrees did not appear, in the final processing of the results, the assessments of three and four were taken as “insufficiently” and the assessments of five and six as “sufficiently” stimulated and developed. This more rigorous approach to summarising data was taken deliberately in order to obtain as clear a roadmap for further learning as possible.

The study was conducted at the Faculty of Humanities and Social Sciences in Osijek, in the winter semester of the academic year 2013/2014, in the seminar classes in Didactics. The students were divided into thirteen pairs (in one group there were three students because they were a total of 27), and each pair managed one of the thirteen envisaged sessions. The learning approach consisted of three work phases: the theoretical framework of the topics, the practical assignment and the assessment. The resulting data are presented descriptively with the use of nonparametric statistics (absolute, relative and average values and their ranking).

3. Results and discussion

For the purposes of learning optimisation, the formative and diagnostic evaluation were integrated into the teaching process, and the summative evaluation was conducted at the end of the teaching and learning process. Table 1 presents the average assessments (M) given by the students (N = 15–25), student leaders (N = 2–3) and the teaching assistant of all the thirteen topics on active learning, obtained in the thirteen sessions, including the rankings of their effectiveness, according to the fifteen assessment criteria given.

As can be seen in Table 1, of the 13 topics on active learning and teaching, the one that was the most popular (rank 1) among the students was the last, thirteenth session with the topic *Superlearning and Megateaching* (M = 5.82). High average assessments were also achieved by the sessions ranked from the second to the fifth place, i.e. the topics *Learning to Learn* (M = 5.81), the *Choice of Teaching Methods Based on Research* (M = 5.73), *Integrative Learning* (M = 5.72) and *Focus on Students* (M = 5.55), with the assessments nearest to 6 on the scale of 1 to 6.

Table 1. Results of formative evaluation of active learning and teaching

Assessment criteria	Number of topic and (students)												
	M1 (25)	M2 (25)	M3 (24)	M4 (21)	M5 (17)	M6 (17)	M7 (21)	M8 (21)	M9 (19)	M10 (15)	M11 (15)	M12 (15)	M13 (21)
1. Topic introduction	5.88	5.76	5.92	5.90	5.88	5.88	5.95	5.95	5.89	5.93	5.93	6.00	6.00
2. Learning outcomes	5.82	5.48	5.79	5.81	5.82	5.82	5.86	5.90	5.95	5.93	5.60	5.80	5.81
3. Giving instructions	5.76	5.80	5.62	5.24	5.76	5.65	5.67	5.90	5.95	6.00	5.80	5.93	5.90
4. Materials	5.82	5.88	6.00	5.95	5.82	5.94	5.95	5.95	5.95	5.93	5.93	5.93	6.00
5. Strategies	5.82	5.80	5.50	5.48	5.82	5.76	4.81	5.76	5.47	4.87	4.87	5.73	5.95
6. Explanations	5.70	5.48	5.54	5.76	5.70	5.82	4.76	5.90	5.74	5.80	5.40	5.73	5.90
7. Key terms	5.47	5.36	5.54	5.43	5.47	5.59	5.33	5.57	5.63	5.60	5.53	5.67	5.72
8. Dynamics	5.53	5.56	5.67	5.52	5.53	5.65	5.14	5.81	5.74	5.20	5.07	5.53	6.00
9. Lesson structure	5.65	5.80	5.67	5.24	5.65	5.47	5.05	5.81	5.79	4.93	5.13	5.47	6.00
10. Involvement	5.41	5.44	5.62	5.33	5.41	5.53	4.95	5.71	5.63	4.60	5.00	5.60	5.86
11. Interest	5.47	5.36	5.17	4.81	5.47	5.18	4.71	5.76	5.53	4.47	4.73	5.60	5.81
12. Initiative	5.12	4.52	4.79	4.95	5.12	5.12	4.86	5.67	5.58	4.33	4.53	5.73	5.57
13. Discussion	4.88	4.52	4.96	4.95	4.88	5.06	4.95	5.81	5.63	4.27	4.47	5.60	5.48
14. Learning success	5.35	5.32	5.29	5.33	5.35	5.53	5.43	5.81	5.68	5.00	5.33	5.73	5.57
15. Support	5.47	5.44	5.33	5.43	5.47	5.53	5.33	5.81	5.84	5.47	5.33	5.73	5.76
Theme/ Session assessment	5.26	5.43	5.49	5.41	5.54	5.55	5.25	5.81	5.73	5.22	5.24	5.72	5.82
Theme/ Session ranking	10	8	7	9	6	5	11	2	3	13	12	4	1
Student leaders' assessment	5.13	4.26	5.40	5.43	5.10	5.10	4.76	5.73	5.23	4.57	4.60	5.30	5.80
Teaching assistant's assessment	5.46	5.13	5.73	5.60	5.60	5.70	4.60	5.93	5.00	5.20	4.13	5.87	5.73

As formative evaluation does not affect the final grade, but is in the function of learning, its developmental and diagnostic context is mostly reflected in a further aggregate analysis of the assessment criteria. The analysis showed that, in the course of active teaching, the students learned the most on how to prepare didactic materials for active learning ($M = 5.93$), to introduce a topic ($M = 5.92$) and learning objectives ($M = 5.72$), to give instructions ($M = 5.72$) and explanations ($M = 5.57$), to adjust the dynamics of teaching ($M = 5.53$), to highlight the key concepts ($M = 5.52$), to provide support ($M = 5.51$), to successfully structure ($M = 5.50$), and methodically shape ($M = 5.48$) the course of a lesson. By somewhat lower assessments, the students have pointed out that, in active teaching, they also stimulated the learning success ($M = 5.43$), involvement ($M = 5.40$), interest ($M = 5.18$), initiative ($M = 2.50$),

and discussion ($M = 5.00$), which are the development determinants of active teaching requiring encouragement and support, especially for students who are more difficult to activate. It is evident from the analysis of the assessments that the student leaders assessed their own performance in eight sessions (61.5) lower than the teaching assistant, and in eleven sessions (84.6) lower than the students, which can be explained by their lack of experience in leading and teaching roles.

Table 2. Results of formative evaluation of the elements of active teaching

(students) Assessment criteria	Number of topic and (students)												
	M1 (25)	M2 (25)	M3 (24)	M4 (21)	M5 (17)	M6 (17)	M7 (21)	M8 (21)	M9 (19)	M10 (15)	M11 (15)	M12 (15)	M13 (21)
1. Topicality	5.56	5.72	5.63	5.52	5.71	5.35	5.57	5.81	5.74	5.73	5.60	5.87	5.90
2. Applicability	5.48	5.76	5.54	5.48	5.76	5.35	5.52	5.81	5.74	5.67	5.40	5.87	5.71
3. User-friendliness	5.64	5.88	5.58	5.71	5.82	5.59	5.38	5.81	5.79	5.73	5.13	5.80	5.76
4. Transparency	5.52	5.52	5.58	5.48	5.76	5.41	4.95	5.81	5.79	5.73	5.33	5.53	5.86
5. Coherence	5.08	5.24	5.5	5.52	5.59	5.29	4.95	5.76	5.58	5.73	5.07	5.53	5.81
6. Personal contribution	4.88	5.08	5.17	5.14	5.24	5.06	5.19	5.52	5.74	4.87	4.93	5.60	5.38
Theme/ Session assessment	5.4	5.53	5.5	5.48	5.64	5.34	5.26	5.75	5.73	5.58	5.24	5.7	5.74
Theme/ Session ranking	9	7	8	10	5	11	12	1	3	6	13	4	2
Student leaders' assessment (2)	4.92	4.08	5.55	5.33	5.25	5.17	4.75	5.5	4.42	4.75	4.75	4.75	5.5
Teaching assistant's assessment (1)	4.83	4.33	5.17	5.5	5.17	5.17	4.33	5	4.67	4.83	3.83	5.67	5.33

Same as in the previous analysis, the elements of active teaching were most prominent in the topics/sessions focused on learning – how to learn, super learning and mega learning, the optimal choice of learning strategies, action-oriented teaching and the use of multimedia, whereas the methods of moral teaching and the creation of a positive atmosphere were somewhat less prominent, which suggests that in addition to educational influences, the influences related to upbringing education should be more stimulated as well.

In the course of active learning, the most stimulated were user-friendliness ($M = 5.67$), topicality ($M = 5.67$), applicability ($M = 5.62$), and transparency ($M = 5.56$) of learning, and somewhat less: coherence ($M = 5.42$) and personal contribution to learning ($M = 5.21$). The student leaders assessed their performance in six sessions (46) lower than the teaching assistant, and in eight sessions (61.5) lower than the students, which is a significant increase in relation to the previous assessments.

The final assessment was conducted at the end of the seminar classes, and it sought students' feedback on how much the pedagogical principles (Table 3) and development determinants of active teaching (Table 4) were stimulated and developed, as well as how prominent the indicators of its quality (Table 5) and effectiveness (Table 6) were.

Table 3. Assessment of the pedagogical principles of active learning and teaching (N = 24)

No.	<i>The following pedagogical principles of active teaching were stimulated and developed in the course of learning</i>	No		Yes		Rank
		f	f%	f	f%	
1.	Purposefulness – ongoing contributions to the improvement of teaching	6	25.0	18	75.0	10
2.	Striving for development – motivation for work and progress	5	20.8	19	79.2	4
3.	Involvement – all students, the teacher and the teaching assistant are involved	4	16.7	20	83.3	2
4.	Constructive criticism – positive and well-intentioned communication focused on behaviour that needs to be changed	5	20.8	19	79.2	4
5.	Opportunity for (self-)reflection and stimulating dialogue about teaching and own performance	5	20.8	19	79.2	4
6.	Support to students for better achievement of learning objectives	5	20.8	19	79.2	4
7.	A sense of responsibility for the quality and co-structuring of lessons	7	29.2	17	70.8	12
8.	Improving own theory and practice	6	25.0	18	75.0	10
9.	Verification of own work, satisfaction and recognition of successful performance	5	20.8	19	79.2	4
10.	Continuous (self-)assessment and formative evaluation	4	16.7	20	83.3	2
11.	Development of cooperation and partnerships	2	8.3	22	91.7	1
12.	Empowering learning communities	5	20.8	19	79.2	4

The analysis of the results showed that the principles of cooperation, partnership and involvement contribute to the successful implementation of active learning and teaching the most. In the course of learning, a relationship was developed in which all the participants were satisfying their needs, but also adapting to each other, which resulted in contributions at the individual and collective level. Similar findings have been presented by other authors who emphasise that those who have the opportunity to learn in an active way learn faster and easier, and their knowledge is longer-lasting (Johnson et al., 1998, Meredith et al., 1998; Buljubašić-Kuzmanović, 2009). In addition to the above, the students highlighted the contribution of continuous (self-)

assessments and formative evaluation which is evident in the assessments of support in the course of learning, the opportunities for self-reflection and constructive criticism as part of the process. Therefore, the fact that some students need a longer time to achieve the set principles should not be ignored, which is shown by an average of six (22) of the surveyed students.

Table 4. Assessment of the development determinants of active learning and teaching (N = 24)

No.	In the course of learning, the focus was on the following development determinants of active teaching...	Insufficiently		Sufficiently		Rank
		f	f%	f	f%	
1.	Understanding rather than memorising concepts	7	29.2	17	70.8	2
2.	Asking thought-provoking questions	10	41.7	14	58.3	7
3.	Teaching on how to approach learning, problem solving	10	41.7	14	58.3	7
4.	Encouraging presentation of what has been learned in one's own words	10	41.7	14	58.3	7
5.	Promoting explanation of the steps applied in solving a task	10	41.7	14	58.3	7
6.	Promoting the monitoring and checking of own work (e.g. identifying and correcting errors, incompleteness, incorrect answers...)	13	54.2	11	45.8	13
7.	Stimulating the assessment of own work and progress	8	33.3	16	66.7	6
8.	Encouraging giving own opinions and critical reviews	7	29.2	17	70.8	2
9.	Linking educational content with real life examples	6	25.0	18	75.0	1
10.	Giving tasks that allow for the application of knowledge and skills to everyday situations	10	41.7	14	58.3	7
11.	Encouraging individual note-taking and content organisation	10	41.7	14	58.3	7
12.	Stimulating linking contents of different subjects	7	29.2	17	70.8	2
13.	Transparency of evaluation (evaluation and achievement criteria)	14	58.3	10	41.7	14
14.	Development determinants (used to highlight progress and learning success, not just the shortcomings, positive substantiation and support)	7	29.2	17	70.8	2

Of the development determinants that were particularly prominent in active learning, three quarters of the students put the following in the first place: the linking of the contents with everyday life examples and previous knowledge and experience, the stimulation of students to give their own opinions and critical, constructive reviews, understanding rather than memorising concepts, encouraging the linking of contents of different courses and positive substantiation and support to development and progress (70.8). These determinants of active teaching were emphasised by Terhart

(2001) as well, as part of the analysis of the methodological problems of teaching, i.e. teaching and learning methods, where he specifically emphasises action-oriented teaching, i.e. integrative learning as the basis of learning from life for life. In addition, more than half of the students (58.3) highlighted the diversity of methods, i.e. the ways of setting and solving tasks with clear explanations and steps for their application in learning and practice, and that the questions that encourage thinking and application of knowledge to everyday situations were sufficiently represented. Since these are very complex development determinants of active learning and teaching, which are still at the development stage with the students, it was expected that the remaining students (41.7) would assess the guidelines as not sufficiently represented in the course of learning as well as the encouragement of students in identifying and correcting errors, ambiguities, incorrect responses (54.2) and the explanation of assessment criteria and achievement (58.3).

Table 5. Assessment of the indicators of active learning and teaching (N = 24)

No.	At the end of the seminar classes, I feel stronger and more competent in...	Insufficiently		Sufficiently		Rank
		f	f%	f	f%	
1.	...the organisation and structuring of lessons	3	12.5	21	87.5	2
2.	...the use of new methods of (self-)learning and teaching	4	16.7	20	83.3	3
3.	...the introduction of new technologies in teaching	6	25.0	18	75.0	4
4.	...improving the climate and relationship among students in the classroom	7	29.2	17	70.8	5
5.	...better motivation of students to learn	11	45.8	13	54.2	11
6.	...stimulating greater involvement of students and active learning	8	33.3	16	66.7	6
7.	...more efficient class management and maintenance of good order and discipline	14	58.3	10	41.7	13
8.	...better adaptation of teaching to the individual differences among students	9	37.5	15	62.5	9
9.	...organising problem teaching and encouraging thinking	8	33.3	16	66.7	6
10.	...stimulating students for self-regulated learning	8	33.3	16	66.7	6
11.	...stimulating the development of metacognitive skills in students	11	45.8	13	54.2	11
12.	...the use of formative evaluation of the process	9	37.5	15	62.5	9
13.	...more efficient provision of feedback to students	2	8.3	22	91.7	1

The assessment of the active learning indicators focused mostly on providing feedback (rank 1), and it was expected that priority would be given to the skills related to organising and structuring lessons, which was slightly less prominent (rank 2).

Furthermore, the students highly ranked the development of skills for using new strategies and methods of (self-) learning and teaching, the introduction of new technologies in teaching and improving the environment and the relationships among students in the classroom and encourage self-regulated learning of students as significant indicators of growth and development. The determinants which did not take enough momentum in the course of active teaching and learning mostly relate to the skills of effective and efficient class leadership and maintaining order, work and discipline, and somewhat weaker, but still insufficient, the issues of students' motivation and encouraging the development of meta-cognitive skills in students. In order to explain the above indicators, as well as all the others which are related to pedagogical principles and determinants of active teaching, we analysed students' assessments related to the core elements and the backbones of active learning and teaching (Table 6).

Table 6. Core elements and backbone of the effectiveness of active learning and teaching

No.	The core elements and backbone of the effectiveness of active learning and teaching were reflected in...	Insufficiently		Sufficiently		Rank
		f	f%	f	f%	
1.	...the orientation – emphasis on learning objectives	0	0.0	24	100	1
2.	...structuring – clear dynamics and structure of teaching	1	4.2	23	95.8	3
3.	...modelling – the strategies, methods and procedures for problem solving, higher order thinking, self-regulated learning	9	37.5	15	62.5	14
4.	...the application of what has been learned	6	25.0	18	75.0	11
5.	...proactive management of the education process	4	16.7	20	83.3	9
6.	...supportive and stimulating learning environment	3	12.5	21	87.5	5
7.	...adaptation of learning and teaching to individual needs	5	20.8	19	79.2	10
8.	...reflectivity of teaching and learning	3	12.5	21	87.5	5
9.	...formative evaluation and feedback	3	12.5	21	87.5	5
10.	...facilitating the development of functional knowledge (thinking)	3	12.5	21	87.5	5
11.	...facilitating teamwork	0	0.0	24	100	1
12.	...stimulating creativity and intellectual curiosity	2	8.3	22	91.7	4
13.	...increasing the satisfaction of teaching	8	33.3	16	66.7	12
14.	...empowerment for inter-linking contents	8	33.3	16	66.7	12

Active learning was mostly reflected in teamwork and its orientation (clearly defined learning objectives), structuring (clear dynamics and structure of the teaching process), stimulating creativity and intellectual curiosity, enabling the development of functional knowledge (opinions), the reflectivity of teaching and learning, the

stimulating learning environment, formative evaluation and providing feedback on learning with proactive management of the educational process and the adjustment of learning and teaching methods to the different needs of pupils/students. What was also recognised as a good element of active teaching and learning, was the application of the acquired knowledge, the strengthening of inter-connectivity of contents and the increase of satisfaction with the teaching. Somewhat weaker footholds of active learning for one-third of the students were, same as in the previous analyses, the very modelling of classes, especially when involving the strategies, methods and procedures of problem solving, higher order thinking and self-regulated learning.

4. Conclusion

Taking into consideration all the elements of formative and summative evaluation, it can be concluded that, in addition to cooperation and involvement, the success of active learning in higher education teaching is also influenced by the feedback students receive in the learning process, as well as clearly defined learning objectives and evaluation criteria. In the development of functional knowledge, creativity, intellectual curiosity and reflectivity of learning, the most prominent factor was the adaptation to the individual, i.e. it was acknowledged that some students need a longer time to achieve the set goals. The results thus showed that a quarter of the surveyed students seek additional incentive in the development process of active teaching. Similarly, the strategies of moral teaching should be given more attention.

Through the implementation of the envisaged activities, this paper has contributed to the implementation and evaluation of active learning in higher education and serves as encouragement to future teachers to apply active learning, and to develop different strategies and methods of active learning that are not sufficiently present or stressed in formal education, but are an integral part of quality education.

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Evalvacija aktivnega učenja v visokošolskem poučevanju

Znanje relativno hitro zastara zaradi kopičenja novih znanstvenih informacij na področju znanosti in študenti lahko svoje znanje optimalno razvijajo le, če se usposobijo za hitro, učinkovito in kontinuirano učenje. Eden od pogojev za celostni razvoj študentov je, da jih postavimo v središče izobraževalnega procesa, upoštevajoč različne potrebe, interese in razvojne dejavnike vsakega posameznika. Vse to pa zahteva neprekinjeno, formativno evalvacijo napredka posameznika pri učenju. Evalvacija aktivnega učenja v visokošolskem poučevanju nakazuje na enotnost procesov učenja in poučevanja, nju-

ne soodvisnosti in komplementarnosti. S teoretičnega vidika lahko celoten proces izobraževanja opredelimo kot interaktivno-komunikacijski proces, pri katerem je ključno vprašanje: kako načrtovati, modelirati, izvajati in evalvirati pouk, pri katerem bodo študenti kar se da aktivni? Prispevek predstavlja evalvacijo učinkov aktivnega učenja, ki je bilo organizirano pri trinajstih (13) seminarskih vajah iz Didaktike v zimskem semestru 2013/2014. Z vidika dokimologije in didaktike je pomembno, da je evalvacija znanja formativna, normativna in sumativna (Kyriacou, 2001). Namen formativne evalvacije (usmerjena v proces) je ustvariti priložnost, da študenti/učenci prejmejo povratne informacije o svojem napredku, namen sumativne evalvacije (usmerjena v rezultat) pa je dodeliti oceno in v skladu z njo opredeliti znanje študentov/učencev. Natančneje, formativna evalvacija zajema poučevanje, pri katerem študenti upravljajo s svojimi učnimi in metakognitivnimi procesi, vključno s samoregulacijo učenja oziroma s spreminjanjem postopkov učenja v primeru težav pri doseganju zastavljenih ciljev.

V raziskavo je bilo vključenih 27 študentov tretjega letnika dvopredmetnega študija Pedagogike in različnih pedagoških disciplin (zgodovina, filozofija, hrvaški jezik in književnost, angleški jezik in književnost, nemški jezik in književnost) na Filozofski fakulteti v Osijeku. Učenje je bilo tematsko vezano na multidisciplinarne, interdisciplinarne in transdisciplinarne teme v povezavi z aktivnim poučevanjem, uporabili pa smo različne strategije poučevanja in evalvirali njihove učinke. S pomočjo formativne, diagnostične in sumativne evalvacije, je bil cilj raziskati pedagoška načela in razvojne determinante ter kazalce kakovosti in učinkovitosti aktivnega poučevanja. Izhajajoč iz cilja smo opredelili dva raziskovalna problema:

- napraviti formativno, in posledično, diagnostično evalvacijo vseh trinajstih tem o aktivnem poučevanju, obravnavanih pri trinajstih seminarskih vajah s študenti in primerjati razlike v ocenah, ki so jih podali študenti, študenti-vodje in pomočnik (asistent),
- izvesti končno oceno aktivnega poučevanja in analizirati, katera načela, razvojne usmeritve, kazalniki kakovosti in učinkovitosti aktivnega poučevanja so se v (ne)zadostni meri spodbujali in razvijali med učnim procesom ter podati smernice za nadaljnje delo in učenje.

Vsak študent, študent-vodja in asistent je 13-krat ocenil proces poučevanja in učenja (formativna ocena) in na koncu seminarskih vaj je vsak študent še enkrat podal svojo oceno (sumativno ocenjevanje). To pomeni, da smo dobili 320 ocen (256 študentov, 27 študentov – vodij, 13 asistentov in 24 končnih ocen). Formativna evalvacija je potekala na podlagi dveh lestvic. Prva lestvica je bila osredotočena na študente-vodje vsakih seminarskih vaj, njihove veščine in osebno vpletenost ter pobude pri aktivnem učenju in poučevanju. Druga lestvica je bila usmerjena na elemente aktivnega učenja. Sumativna evalvacija je zajemala štiri lestvice. Prva se je nanašala na ocenjevanje pedagoških načel aktivnega učenja, druga na ocenjevanje njegovih razvojnih smernic, tretja na indikatorje kakovosti in četrta na učinkovitost aktivnega učenja. Pristop k učenju je bil sestavljen iz treh delovnih nalog, in sicer: teoretični okvir teme, praktična naloga in ocenjevanje. Analiza je pokazala, da so se študenti pri učenju aktivnega poučevanja

najbolje naučili kako: pripraviti didaktično gradivo za aktivno učenje, napraviti uvod v temo in cilje učenja, dati navodila in pojasnila, prilagoditi dinamiko poučavanja, izpostaviti ključne koncepte, dati podporo, dobro strukturirati in metodično oblikovati potek učne ure. Značilnosti aktivnega poučavanja so prišle v ospredje pri seminarjih, povezanih z naslednjimi temami: učenje učenja, superučenje in megaučenje, najoptimalnejša izbira strategij učenja, poučavanje usmerjeno na dogajanje in uporaba multimedije. Teme o metodah moralnega poučavanja in ustvarjanju pozitivnega vzdušja so bile manj v ospredju, kar implicira na dejstvo, da je poleg izobraževalnega vpliva potreben tudi vzgojni vpliv pri poučavanju. Med procesom aktivnega učenja je bila najbolj spodbujena prijaznost do učečega, aktualnost, uporabnost in preglednost učenja.

Končna ocena je bila podana ob koncu seminarskih vaj, študenti pa so podali povratno informacijo o tem, kako so se spodbujala in razvijala pedagoška načela ter razvojni dejavniki aktivnega poučavanja, in v kolikšni meri so bili izraženi indikatorji kakovosti in učinkovitosti. Analiza rezultatov je pokazala, da so načela sodelovanja, partnerstva in vključevanja najbolj prispevala k uspešni realizaciji aktivnega učenja in poučavanja. Med učenjem se je razvil odnos, v katerem so vsi udeleženci zadovoljevali svoje potrebe, a hkrati so se drug drugemu tudi prilagajali, kar je bil prispevek na individualni in kolektivni ravni. Nenazadnje, študenti so še pozitivno izpostavili prispevek kontinuirane (samo)ocene in formativne evalvacije, kot je razvidno iz ocen podpore pri učenju, možnosti za samorefleksijo in konstruktivne kritike.

Tri četrtine študentov je na prvo mesto razvojnih determinant, ki so se po njihovem mnenju zadostno razvile v procesu aktivnega učenja, postavilo povezavo vsebine s primeri iz vsakdanjega življenja in predhodnega znanja in izkušenj. Prav tako so izpostavili: spodbudo za izražanje lastnih mnenj in konstruktivne kritike, razumevanje namesto mehničnega učenja pojmov, spodbujanje povezovanja različnih predmetov in vsebin ter podporo razvoju in napredku (70,8%). Ocena kazalnikov aktivnega učenja je bila najbolj osredotočena na dajanje povratnih informacij (rang 1), medtem ko smo pričakovali, da bodo tukaj v prednosti spretnosti v povezavi z organizacijo in strukturiranjem učnih ur (rang 2). Najmanj razvite determinante med procesom aktivnega učenja in poučavanja so po mnenju študentov bile upravljanje in vzdrževanje reda, dela in discipline; nekoliko bolje, a še vedno nezadostno razvite determinante pa so bile motivacija študentov in spodbujanje razvoja njihovih metakognitivnih sposobnosti. Aktivno učenje se je najbolj odražalo v timske delu in njegovi usmerjenosti, strukturiranju in spodbujanju ustvarjalnosti in intelektualne radovednosti, omogočanju razvoja funkcionalnih znanj, refleksivnosti učenja in poučavanja, spodbudnem okolju za učenje, formativni evalvaciji in zagotavljanju povratnih informacij o učenju z proaktivnim upravljanjem izobraževalnega procesa ter prilagajanju metod učenja in poučavanja potrebam posameznikov. Nekoliko manjša vloga aktivnega učenja je bila po mnenju tretjine študentov strukturiranje učnih ur, še posebej z vidika strategij, metod in postopkov reševanja težav, mišljenja na višji ravni in samoreguliranega učenja.

Ob upoštevanju vseh elementov formativne in sumativne evalvacije lahko sklepamo, da je ob sodelovanju in vključenosti študentov, uspeh aktivnega učenja v visokošolskem

izobraževanju odvisen od povratnih informacij, ki jih študenti dobijo ter od jasno opredeljenih učnih ciljev in kriterijev ocenjevanja. Z vidika razvoja funkcionalnega znanja, ustvarjalnosti, intelektualne radovednosti in refleksivnosti učenja, je v naši raziskavi bil najbolj izstopajoč dejavnik prilagajanje posamezniku, oziroma priznavanje dejstva, da nekateri študenti potrebujejo več časa za doseganje ciljev. Rezultati so pokazali, da je četrtnina anketiranih študentov iskala dodatno spodbudo v razvojnem procesu aktivnega poučevanja. Prav tako bi bilo treba nameniti več pozornosti strategijam poučevanja moralne vzgoje. S pomočjo izvajanja načrtovanih aktivnosti lahko ta prispevek služi kot doprinos k izvajanju in evalvaciji aktivnega učenja in poučevanja v visokošolskem izobraževanju in je spodbuda visokošolskim učiteljem za aplikacijo ter razvijanje različnih strategij in metod aktivnega učenja. Nenazadnje, aktivno učenje in poučevanje ni dovolj prisotno v formalnem izobraževanju, je pa sestavni del kakovostne vzgoje in izobraževanja.

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