Ćirić, M., & Semiz, M. (2025). Representation of student engagement indicators – student and faculty perception, *SCIENCE International journal, 4*(1), 107-112.
10.35120/sciencej0401107c UDK: 378.091.322(497.11)

REPRESENTATION OF STUDENT ENGAGEMENT INDICATORS – STUDENT AND FACULTY PERCEPTION

Marina Ćirić[1], Marina Semiz[2]*

[1]University of Niš, Faculty of Philosophy, Serbia, e-mail: marina.ciric@filfak.ni.ac.rs
[2]University of Kragujevac, Faculty of Education, Serbia, e.mail: semizmarina@pfu.kg.ac.rs

Abstract: Student engagement is a new concept and phenomenon in the Republic of Serbia system of higher education as an essential element of the modern paradigm, student-centered education. Transformation of pedagogic, didactic, and methodical approaches leads to the student becoming an active participant in his own development. This process implies a prominent level of responsiveness to higher education institutions, faculty, and students. The main goal of this research is to identify individual indicators of student engagement and to determine the dominant indicators. Two instruments were adapted and used to collect data on the indicators of student engagement in the higher education context, College Student Report (NSSE) and a Faculty Survey of Student Engagement (FSSE). The mentioned questionnaires are complementary and provide insight into student engagement from the perspective of students and teachers. The research sample consisted of 632 students and faculty from different higher education institutions of the University of Niš, Serbia. The work was based on the NSSE theoretical concept and the results compared to similar research in different national contexts. The results indicate that the examined students perceive the higher education institution primarily as a place where they can express their opinion, exchange it with others and take the best from these interactions to build their personality. The role of relations and the partnership in construction of knowledge and meaning are emphasized. According to the data, the respondents estimated that the dominant role in their studies is played by the relationships they achieve in the institution. Therefore, the interaction that takes place in institutions can be of crucial importance for positive or negative experiences that students associate with the process of studying. The interviewed faculties gave relatively high evaluations to the presented areas and indicators. Within the categories, professors and associates are unique in assessing that effective teaching is the dominant indicator of student engagement. These data are in accordance with the quality improvement strategy at the institutions included in this research, in which the primary strengths are precisely teacher competencies.

Keywords: higher education, student engagement, institutional context, partnership, NSSE indicators
Field: Education, Humanities

1. INTRODUCTION

Student engagement is a new concept and research phenomenon in the Republic of Serbia. It introduces into the system of higher education as a principal element of the modern paradigm, student-centered education. In traditional higher education pedagogy, there have been changes in the pedagogic, didactic, and methodical approach. The consequence of such changes is the transformation of teaching to learning, so the student became an active participant in his own development. This process implies an important level of responsiveness of teachers and student activities, in terms of knowledge construction, participation, involvement in activities and reflection on the learning process (Ćirić, 2022a). More specifically, students could engage through active participation in discussions, creating their own projects and presentations, researching topics they find interesting, contributing to the classes (Semiz, 2020). All of this requires the faculty to respond to the challenges, and to continuously improve, exchange experiences with colleagues, cooperate with students (mentoring, working on assignments, information on progress) and evaluate the teaching process. Although the emphasis is on the actions of students and teachers, Ćirić (2024) points out that the engagement of students is more than regularly taking exams and fulfilling various obligations. In the context of the reform process in the Republic of Serbia, students expected to participate equally in all segments of higher education, and the concept of engagement applied to emphasize that students are an integral part of the academic community.

The modern, conceptual model that presents student engagement as a relational process encompasses cognitive, affective, and behavioral aspects of engagement with reciprocity of responsibility between student and faculty. Student engagement implies the frequency and level of devoted to learning, activities and interactions, and institutional opportunities that achieve certain level of student engagement (Kundačina i Ilić, 2015). Considering the importance of student characteristics and the overall experience

*Corresponding author: marina.ciric@filfak.ni.ac.rs

they bring to the study process, as well as the role of the educational and social environment, Kuh and colleagues (Kuh et al., 2006) tried to determine engagement through two key questions related to the study process: What does the student do? and What does the institution do? From this position, the author defines engagement as the total time and effort that students devote to effective academic activities and the level to which institutions encourage them to participate (Kuh, 2009).

Indicators of student engagement were operationalized in a manner that applied in research based on the NSSE conceptual framework (National Survey of Student Engagement, 2013). Student engagement examined through the perceptions of students and faculty in the following areas. First, Academic challenge refers to teaching activities in which students gave the opportunity to put effort into independent research and creatively approach solving tasks using all available resources. A more precise definition of this category includes the following indicators: Higher-Order Learning, opposed to the transmission of knowledge and the memorization of facts. Students solve complex tasks by participating in productive activities. Reflective and Integrative Learning indicates fostering a personal relationship to tasks and learning; connecting knowledge, experiences, and attitudes as well as the opportunity for students to check, revise, compare and see them from different perspectives. Learning Strategies imply responsibility, careful planning and monitoring of activities that help students to review the effort and time invested, but also the task and the context. Quantitative Reasoning is related to numerical literacy and provides an opportunity for students to evaluate, support and critically argue content using their own and others' statistical data. Second area named Learning with Peers it is based on opportunities for students to communicate and interact with each other, access contents and solve tasks through active construction and co-construction of knowledge. A closer definition of this category implies the indicators of Collaborative Learning and Discussions with Diverse Others. Experience with Faculty is the third area of engagement indicators and it reflects formal and non-formal aspects of Student-Faculty Interaction. More closely, it is determined that Effective Teaching Practices represent various aspects of teaching effectiveness and modern strategies. The fourth area, Campus Environment is related to the academic and social integration of students and includes indicators related to the Quality of Interactions, providing Supportive Environment for realizing potential by harmonizing personal and academic obligations and affinities.

Over time, this conceptual framework has become the dominant research paradigm of the quality in higher education. The original version has been adapted to different contexts and used in universities around the world (Maloshonok, 2024). Versions that are adapted to the national contexts: SAD and Canada (NSSE), Australia and New Zealand (AUSSE), Republic of South Africa (SASSE), China (CCSS), Taiwan (TSEM), Great Britain (UKES), Ireland (ISSE). In recent years, the application of this framework has extended to other countries of Western and Eastern Europe (Ćirić, 2022a). In addition to the indicators of engagement this conceptual framework included an examination of the perceptions of higher education professors and associates, with the aim of complementing their perspective on the characteristics of student engagement in the national and context of a particular higher education institution.

2. MATERIALS AND METHODS

This paper is part of a larger study, and the main goal of the research was to identify individual indicators of student engagement and to determine the dominant indicators in relation to the NSSE operationalized criteria. It was assumed that that in all areas, indicators and with all respondents the quality of student engagement is high. The sample consisted of 632 respondents, 514 students and 118 professors and associates from institutions of the University of Niš, Serbia. The sample structure was represented in Table 1.

Table 1. The respondents sample structure

Higher education institution	Respondents		Students		Faculty	
	N	%	N	%	N	%
Faculty of Sport and Physical Education	110	17.4%	92	17.9%	18	15.3%
Faculty of Sciences and Mathematics	108	17.1%	87	16.9%	21	17.8%
Faculty of Philosophy	142	22.5%	115	22.4%	27	22.9%
Faculty of Medicine	65	10.3%	56	10.9%	9	7.6%
Faculty of Electronics	91	14.4%	63	12.3%	28	23.7%
Faculty of Electronics	116	18.4%	101	19.6%	15	12.7%
Total	632	100.0%	514	100.0%	118	100.0%

The author of the research results in Table 1. is Marina Ćirić

The research was conducted using a modified College Student Report (NSSE) and Faculty Survey of Student Engagement (FSSE), questionnaires are complementary and provide insight into student engagement from the perspective of students and faculty. The questionnaires were adapted and used with the author's permission.

3. RESULTS AND DISCUSSIONS

The central task of the research was to determine the level of representation of student engagement in the examined sample. The authors hypnotized average score above 2.40 in all areas of student engagement (Table 2 and 3). The research was comparing average values on students and faculty subscales of engagement indicators, as well as the perspective of different national contexts.

Table 2. Representation of student engagement indicators – student population

Student engagement area/indicator	N	Min.	Max.	AM	SD
Academic challenge	515	1.11	4.00	2.60	0.53
Learning with Peers	516	1.00	4.00	2.85	0.55
Student-Faculty Interaction	515	1.10	4.00	2.48	0.55
Campus Environment	515	1.14	4.00	2.63	0.58
Higher-Order Learning	514	1.00	4.00	2.68	0.68
Reflective and Integrative Learning	515	1.14	4.00	2.83	0.61
Learning Strategies	514	1.00	4.00	2.68	0.68
Quantitative Reasoning	513	1.00	4.00	2.20	0.72
Collaborative Learning	515	1.25	4.00	2.84	0.56
Discussions with Diverse Others	513	1.00	4.00	2.86	0.86
Student-Faculty Interaction	515	1.00	4.00	2.18	0.74
Effective Teaching Practices	515	1.00	4.00	2.77	0.67
Quality of Interactions	515	1.00	4.00	2.95	0.70
Supportive Environment	513	1.00	4.00	2.30	0.71

The author of the research results in Table 2. is Marina Ćirić

The data (Table 2) indicates that students perceive higher education institutions as a place where they can express their opinion, exchange it with others and take interactions for building their personality. They emphasized the role of connections and the construction of knowledge and meaning. Areas of engagement where the social dimension, Learning with Peers (2.85) and Campus Environment (2.63), ranked better than areas oriented towards the educational dimension (Academic Challenge - 2.60 and Student-Faculty Interaction 2.48). Also, the results within the subscales indicate a more pronounced social aspect. Of all the indicators, students estimate the Quality of Interactions in the institution with the highest average values (2.95). Immediately afterwards, students consider fostering diversity (2.86) and cooperative learning (2.84) as high quality. According to the data, the respondents estimated that the dominant role in their studies is by the relationships they have in the institution. Interactions in institutions can be crucial for positive or negative experiences that students associate with the study process.

Although the results obtained indicators related to cooperation and interactions as dominant, it is still not possible to speak uniformly about this aspect. Students evaluate the quality of the interactions they achieve as satisficed, but they also perceive the environment as insufficiently supportive (2,30). These data indicate that students establish quality relationships in the organization, but they do not receive support to enrich their study experience. In this regard, it is particularly important to create an organizational climate and culture of concern for the well-being of all its participants. This process implies a systematic approach and offers different teaching activities. It is also necessary to connect with different stakeholders who can contribute to extracurricular engagement. This expands the scope of institutions and provides an opportunity to achieve competitiveness in accordance with their missions and visions. According to the assessment of students, interactions with faculty (2.18) are not frequent and adequate. In contrast to the quality of interactions, students rank the quality of teaching highly (2.77). That means the productive relations between students and faculty are more intensive in the teaching process. Relations in the examined sample take place in a formal context, while communication outside of class is rare. The Academic Challenge tends reflection and integration of knowledge (2.83), the development of strategies and an in-depth approach to learning (2.68) as well as towards the metacognitive abilities of students (2.68). Students perceived numerical literacy as less important (2.20). The neglect of statistical and numerical data is not only a case of the sample in this research. The authors in different contexts (Rasmi Abed et al., 2016; Fauzan et al., 2024) emphasized the importance and ways to examine numerical literacy at all levels of education. Higher education institutions do not pay attention to this area to the

extent that it is necessary.

The average scores in the research overlap in the results obtained in other national contexts. Because normative research indicators are different, they represented without the numerical value. Contrariwise to University of Niš, the results (from 2015 to 2022) in United Kingdom indicate the dominance of academically challenging activities. The lowest ranked activities include social interactions among students and with faculty (Neves, 2020). The Irish Survey of Student Engagement (ISSE) had the most dominant indicators of higher-order thinking activity and the quality of interactions. The results of the research on a sample of Irish students are similar the results obtained in this paper. Namely, effective teaching is the best-ranked area, while interactions with teachers are also the least represented in this context. In Ireland has been a developed wide area of student engagement at all levels of the higher education system, and support for teachers. The data obtained at the University of Niš indicate the high quality and competence of university professors and associates. In North Africa (SASSE - South African Survey of Student Engagement) point to nurturing diversity is among the priorities of the higher education context. At the same time there are low quality interactions in organizations and suggest the need for its improvement (Schreiber & Yu, 2016; Strydom & Mentz, 2010). Considering the context, diversity as an indicator of engagement can be consider differently, from the perspective of racial basis (African respondents) in heterogeneous environments, or economic status and socio-political attitudes in dominantly homogeneous environments (University of Niš). Research of student engagement in China (NSSE - China Student Survey) indicated that the institutional environment perceived as supportive but characterized by the inadequate quality of faculty-student relations (Guo-ying et al., 2012). The lack of interaction between teachers and students significantly affects student achievement (Mei et al., 2016). In contrast to the students at the University of Niš, students in China saw the quality of engagement as insufficient in lots of segments. The reason could be the difference between the contexts of the higher education system. Higher education in the Republic of Serbia is easily accessible. The quality of knowledge that students can expect is quite uniform. No less important, financing of studies is possible with support from state funds. Examining the context and structure of NSSE-China, Ross et al. (2011) state that future graduates in China spend more than 12 hours a day studying during high school to enroll in prestigious colleges. They finance their studies, which are often expensive, and the competitiveness in employment leads them to be extremely competitive. There are elevated expectations of studies in China and the results are lower compared to the sample in Serbia. Similar findings were in research conducted in Australia and New Zealand as well as in the American climate. According to these results, the Quality of Interactions and Effective Teaching are dominant indicators, while the indicator depicting interactions is the least (Coates, 2009). Also, the results obtained on the American normative sample match the results of this research.

In addition to the dominant indicators and areas of engagement from the perspective of faculty, the average values presented in Table 3.

Table 3. Representation of student engagement indicators – faculty

Student engagement area/indicator	N	Min.	Max.	AM	SD
Academic challenge	118	1.82	4.00	3.00	0.49
Learning with Peers	118	1.50	4.00	2.77	0.57
Student-Faculty Interaction	118	1.94	4.00	3.26	0.40
Campus Environment	118	1.96	4.00	3.08	0.42
Higher-Order Learning	118	1.25	4.00	3.22	0.65
Reflective and Integrative Learning	118	1.29	4.00	3.14	0.69
Learning Strategies	118	1.00	4.00	3.19	0.76
Quantitative Reasoning	118	1.00	4.00	2.43	0.75
Collaborative Learning	118	1.00	4.00	3.11	0.70
Discussions with Diverse Others	118	1.00	4.00	2.43	0.75
Student-Faculty Interaction	118	1.00	4.00	2.92	0.60
Effective Teaching Practices	118	2.63	4.00	3.61	0.36
Quality of Interactions	118	1.70	4.00	2.93	0.52
Supportive Environment	118	1.88	4.00	3.22	0.54

The author of the research results in Table 3. is Marina Ćirić

The interviewed professors and associates gave high evaluations to the presented areas and indicators. The highest average value has the area that includes the experience of students with faculty (3.26). This indicator has a low standard deviation (0.40), which proves that there is a unity of respondents. By further observing the average values, the respondents highly evaluate the indicators related to the institutional environment (3.08) and academically challenging activities (3.00). Collaborative learning of students is the lowest evaluated area of student engagement with an average score of 2.77, and the only

one whose value is below 3.

When it comes to results within categories, faculty are unanimous in their assessment that effective teaching is the dominant indicator of student engagement (mean value 3.61, standard deviation 0.36). These data are in accordance with the quality improvement strategy at the institutions of the University of Niš. The indicators according to higher-order thinking and stimulating aspect of a supportive organizational culture (average values 3.22) are also highly positioned. The lowest evaluated indicators by faculty are about fostering diversity among students and numerical reasoning (average values 2.43).

In the sample examined, the measures are similar or higher compared to the normative sample (Fassett et al., 2020). Dealing with tough moments: Assessing faculty preparation for teaching challenges.). The closest to the results of this research are those on a sample of teachers at the UFC University in South Africa. Looking at the available documentation, it is noticeable that there are similarities between the UFC and the context of the University of Niš, especially about introducing innovations in teaching and student support. Also, progress has been made in transforming the organizational culture according to the "student at the center" paradigm, research direction and social engagement. These aspects still mainly belong to the plans of Niš higher education institutions.

The examined teachers focused more on indicators that primarily have an educational role. The most pronounced differences between students and faculty observed in the domain of contextual factors. The teachers perceived the culture of the organization as highly supportive and the interactions with students intense. In contrast, students see these aspects as the weakest of the context of higher education institutions. This kind of relationship and divergence is not the case only with research at institutions in Niš. This trend observed in all normative samples and in all contexts. One of the starting points that could explain the contradictions that have arisen is the fact that the number of faculty is not proportional to the number of students. The reason for this is large groups of students and faculty cannot achieve quality social interaction. Also, professors and associates perceive the educational dimension as dominant, given that higher education institutions primarily have an educational role. It is likely that teachers communicate intensively with students and want to meet each one individually. However, this only applies to a certain number of students, those who initiated the communication and asked for help. Students, as stated in the research of Kuh and colleagues (Kuh et al., 2001; 2006; 2009), do not communicate personally with faculty during their studies. For this reason, they do not perceive the environment and teachers as supportive. In institutions included in this research there is a problem of an insufficient number of teachers and associates, and that this significantly affects the quality of work with students. The data obtained support these claims and points to the need for hiring additional teaching staff, which would directly contribute to the functioning of the institutions. Due to the inconsistency in the perceptions of respondents from the ranks of teachers and students, it is necessary to further deepen the aspects within the indicators to take a closer look at the relationship and interpret the possible reasons for this relationship.

Based on the results obtained it can establish that this assumption that in all areas and with all respondents of student engagement is high (average score) has confirmed.

4. CONCLUSIONS

The starting point for this research was the relevance and complexity that characterizes the phenomenon of student engagement, as well as its role in ensuring the quality of studies and expected outcomes. Unlike other countries where student engagement is the subject of interest and study of research organizations and various projects, in the Republic of Serbia research on this topic is not at an enviable level. Therefore, any scientific and systematic study would represent a significant contribution to obtaining a realistic picture of the state of the starting point for establishing measures and activities to improve this area. In this sense, the emphasis is on examining the stimulating environment for learning in a higher education institution. As the research is based on good practices taken from different educational contexts, it provides an opportunity to see the broader context and compare the results obtained with the results of similar research at the international level. Also, higher education institutions covered by this research can see their advantages as well as areas in which they need to intensify their work. The implications from this research could be a solid start for developing a strategy of improving student learning experience in higher education.

ACKNOWLEDGEMENTS

This study was supported by the Ministry of Science, Technological Development, and Innovations of the Republic of Serbia (Contract No. 451-03-137/2025-03/200165).

The results derived from unpublished doctoral dissertation: Ćirić, M. (2022). Quality of Student Engagement in the Higher Education Context. Niš: Faculty of Philosophy.

REFERENCES

Abed, E. R., Al-Absi, M. M., & Abu shindi, Y. A. (2016). Developing a Numerical Ability Test for Students of Education in Jordan: An Application of Item Response Theory. International Education Studies, 9(1), 161-174.

Coates, H. (2010). Development of the Australasian survey of student engagement (AUSSE). Higher Education, 60(1), 1-17.

Ćirić, M. (2024). Angažovanje studenata i participacija u vannastavnim aktivnostima. Godišnjak za pedagogiju, 9(2), 23-36.

Ćirić, M. (2022a). Kvalitet angažovanja studenata u visokoškolskom kontekstu. Neobjavljena doktorska disertacija. Niš: Filozofski fakultet.

Ćirić, M. (2022b). Faculty Strategies and the Perception of Student Engagement in Higher Education. Facta Universitats - Series: Teaching, Learning and Teacher Education, 6(2), 141–154.

Fauzan, A., Harisman, Y., Yerizon, Y., Suherman, S., Tasman, F., Nisa, S., ... & Syaputra, H. (2024). Realistic mathematics education (RME) to improve literacy and numeracy skills of elementary school students based on teachers' experience. Infinity Journal, 13(2), 301-316.

Fassett, K. T., BrckaLorenz, A., & Hurtado, S. (2020). Dealing with tough moments: Assessing faculty preparation for teaching challenges.

Guo, Y., Connor, C. M., Yang, Y., Roehrig, A. D., & Morrison, F. J. (2012). The effects of teacher qualification, teacher self-efficacy, and classroom practices on fifth graders' literacy outcomes. The Elementary School Journal, 113(1), 3-24.

Kuh, G. D., & Hu, S. (2001). The Effects of Student Faculty Interaction in the 1990s. Review of Higher Education, 24(3), 309–332.

Kuh, G. D., J. Kinzie, J. Buckley, B. Bridges, & J.C. Hayek (2006). What matters to student success: A review of the literature. ASHE Higher Education Report. San Francisco: Jossey-Bass.

Kuh, G. D. (2009). The National Survey of Student Engagement: Conceptual and empirical foundations. In R. M. Gonyea & G. D. Kuh (Eds.). Using NSSE in institutional research. New Directions for Institutional Research, 141, 5–20.

Kundačina, M., i Ilić, M. (2015). Visoko obrazovanje i globalizacija. Zbornik radova sa znanstvenostručnog skupa "Znanost-Duhovnost-Odgovornost"", str. 97-112. Bijakovići-Međugorje: Fakultet društvenih znanosti dr. Milenka Brkića.

Maloshonok, N. (2024). Do student engagement patterns differ across national higher education systems? The comparison of US, Chinese, and Russian high-level research-intensive universities. Innovations in Education and Teaching International, 61(3), 475-486.

Mei, W. U., Parkay, F. W., & Pitre, P. E. (2016). Student–faculty interaction: A key to academic integration and success for ethnic minority students at a major university in Southwest China. Frontiers of Education in China, 11(4), 483-502.

National Survey of Student Engagement (2013). NSSE's Conceptual Framework. Bloomington, IN: Indiana University Center for Postsecondary Research.

Neves, J. (2020). UK Engagement Survey. Advance HE.

Ross, H., Cen, Y., & Zhou, Z. (2011). Assessing student engagement in China: Responding to local and global discourse on raising educational quality. Current Issues in Comparative Education, 14(1), 24-37.

Semiz, M. (2020). Konceptualizacije i pristupi u definisanju kooperativnog učenja. Nastava i vaspitanje, 69(3), 291-312.

Schreiber, B., & Yu, D. (2016). Exploring student engagement practices at a South African university: Student engagement as reliable predictor of academic performance. South African Journal of Higher Education, 30(5), 157-175.

Strydom, J. F., & Mentz, M. (2010). Focusing the student experience on success through student engagement. Pretoria: Council on Higher Education.