PROMOTING STUDENT LEARNING THROUGH FEEDBACK IN HIGHER EDUCATION

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Abstract. Promoting student learning in higher education has recently become a concern among educationalists abroad and in Lithuania. Student learning has been widely researched from both the learner’s and the teacher’s perspective, however, in Lithuania the aspect of promoting learning through feedback provided to students in higher education has not been investigated in depth. This article provides systemic analysis of research literature on feedback from the perspective of general systems theory and reviews research proof connected with its impact on learning as well as discusses features of effective feedback. Finally, the present study is aimed at raising educationalists’ awareness about the critical role of feedback on student learning in higher education.

Keywords: feedback, teaching, assessment, student learning, higher education.

Introduction

Relevance of the study and research problem. Promoting student learning in higher education has in recent years become an issue of concern among educationalists abroad and in Lithuania. Student learning has been analysed from both the learner’s and the
teacher’s perspective: research into students’ experience of learning, their approaches to learning and the relationship between learning and their approaches to learning, as well as into student learning outcomes has been carried out. Learning models and teaching strategies fostering effective learning and their use in practice have been analysed, factors affecting the quality of teaching and underpinning effective learning, the role of assessment in higher education and its impact on student learning have been researched (Prosser and Trigwell\(^1\), Marton and Booth\(^2\), Ramsden\(^3\), Marton and Saljo\(^4\), Race\(^5\), Elton and Johnston\(^6\), Knight and Yorke\(^7\), Burksaitienė and Teresevičienė\(^8\), Zuzevičiūtė and Teresevičienė\(^9\), Teresevičienė and Gedvilienė\(^10\), Šliogerienė\(^11\), Mačianskiene\(^12\), and others). Notwithstanding extensive research, in Lithuania the research problem of promoting learning in higher education through feedback provided to students has not been investigated in depth. Therefore, the object of the present study is feedback provided to students in higher education institutions. The research is aimed at analysing feedback and its use in higher education from the theoretical and practical perspectives. Research objectives include: 1) defining the structure of the study system existing in an institution of higher education; 2) defining the role of feedback provided to students in an institution of higher education; and 3) discussing features of effective feedback provided to students. The purpose of the present article is to summarise the research on feedback in higher education and raise awareness about the role of its use.

The research methods employed in the present study include: 1) literature analysis which was used to establish the role of and different approaches to feedback and its use in higher education; 2) meta-analysis and systemic analysis were used to investigate

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relationships between feedback, teaching, assessment and student learning in higher education.

1. Methodology of Research into Feedback Provided to Students in Higher Education

The present research is based on general systems theory, created by L. von Bertalanffy, and its main assumptions. Firstly, all existing systems may be analysed from different perspectives, i.e. each system can be examined as a separate entity, an interaction between some systems may be investigated, and the impact of such an interaction on each other as well as on other systems can be studied. According to Walonick\textsuperscript{13}, the investigation of systems can follow two general approaches: a cross-sectional approach deals with the interaction between two systems, while a developmental approach deals with the changes in a system over time.

Secondly, each system can be broken down into its components, or subsystems, that interact. As the result of this interaction a change in a subsystem leading to a change in other subsystems occurs, which may further result in a change of the whole system. Under general systems theory, there are three general approaches for evaluating subsystems. A holist approach is to examine the system as a complete functioning unit. A reductionist approach looks downward and examines the subsystems within the system. The functionalist approach looks upward from the system to examine the role it plays in the larger system. All three approaches recognize the existence of subsystems operating within a larger system\textsuperscript{14}.

Thirdly, according to Kuhn\textsuperscript{15} there is one common element for all systems: knowing one part of a system enables us to know something about another part, and the information content of a ‘piece of information’ is proportional to the amount of information that can be inferred from the information. In our case it means that in order to know and understand how the study system existing in a particular institution of higher education works it is necessary to have some information about its subsystems, including their inner structure and relationships among their structural parts, and understand how the subsystems interact with each other.

2. The Structure of the Study System in an Institution of Higher Education

Basing on general systems theory and on the holist approach to examine a subsystem, feedback is a structural part of a subsystem which operates within a larger system and


\textsuperscript{14} Ibid.

\textsuperscript{15} Kuhn, A. The Logic of Social Systems. San Francisco: Jossey-Bass, 1974, cited Ibid.
is “information on the results of system operation which has a further impact on the system”\(^\text{16}\). At this point it is important to stress that the research literature demonstrates that feedback is a structural part of two subsystems operating within the study system which comprises the subsystems of teaching, learning and assessment: on the one hand, it is part of the teaching process; on the other hand, it is part of assessment (Picture 1).

![Diagram of a study system in an institution of higher education](image)

**Picture 1.** The structure of a study system in an institution of higher education

According to general systems theory, a change in feedback will produce a change within the subsystems to which it belongs, i.e. the change will occur in both the subsystem of teaching and the subsystem of assessment. Due to the interaction among the three subsystems, the change in teaching and assessment should affect the subsystem of learning, too, which will eventually lead to a change in the study system to which the three subsystems belong. In order to understand how feedback may promote student learning, let us first analyse the composition of each subsystem and interactions between them.

### 2.1. The Subsystem of Learning

As it can be seen from Picture 1, at the focus of the subsystem of learning are individual learners studying according to their chosen study programme (undergraduate, graduate or post-graduate) in an institution of higher education. It should be kept in mind that each learner brings his/her prior experiences of learning, his/her own learning style, motivation to learn and approaches to learning into the institution where he/she starts studying. Research literature overview proves that these factors play a role in the

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learners’ study process and may add to or diminish the quality of their studies and the level of their achievement.

The relationship between feedback and learning may be illustrated by the analysis of what makes effective learning. Race\textsuperscript{17} characterizes it as learning that is underpinned by seven factors, feedback including: 1) wanting to learn (or students’ intrinsic motivation), 2) taking ownership of the need to learn (or students’ extrinsic motivation), 3) learning by doing (or learning through experience), 4) learning through feedback (from tutors, peers, learning resources, results), 5) making sense of what has been learnt (getting one’s head round ideas, concepts and theories), 6) explaining, or teaching or coaching in order to help students to deepen learning, and 7) making informed judgements through assessment aimed at enabling students to fully deepen their learning. The latter factor makes learning through feedback possible to occur especially in the context of self-assessment and peer-assessment. Thus, it can be assumed that if these factors, feedback including, are fostered during the study process, it is likely that student learning would become effective.

2.2. The Subsystem of Teaching

The subsystem of teaching consists of the following closely intertwined components: programme/plan of strategic development of a higher education institution according to which the study process is directed, study programmes (undergraduate, graduate or post graduate) that foresee learning goals and outcomes (knowledge, skills and competence)\textsuperscript{18} that should be achieved as the result of study of a particular programme, as well as the teaching staff who should meet qualification requirements and ground their teaching on teaching philosophies that are in line with the programme/plan of strategic development of the institution.

It is self-evident that teaching and learning have to be interactive. Students need to understand clearly what goal or standard they are aiming at, whereas teachers need to know about their students’ progress and difficulties with learning so that they can adapt their work to meet their students’ needs. As students’ needs may vary, teachers can find out what they need in a variety of ways (through observation, discussion, from written or oral work) and give feedback. Thus, in the teaching process feedback is “information provided by an agent (e.g. teacher, peer, book, parent, self, experience) regarding aspects of one’s performance or understanding. It occurs typically after instruction that seeks to provide knowledge and skills or to develop particular attitudes”\textsuperscript{19}.

\textsuperscript{17} Race, P., \textit{ supra} note 5, p. viii.


Teaching strategies and methods employed in the process of teaching play an important role in the interaction between teaching and learning. They should be selected so as to best suit the learning goals of a particular study programme and direct students towards reaching the learning outcomes as foreseen in the study programme. Research literature presents evidence that there exists a consistency with general systems theory in relation to a change in a subsystem and its impact on the subsystem itself as well as on other subsystems. It has been established that introduction of innovative teaching and learning strategies and/or methods has a positive impact on students’ learning outcomes (Mačianskienė20, Čiučiulkinienė21, Žindžiuviienė22, Burkšaitienė23, and others). It has also been proven by research that teaching is critical for students’ choice of approaches to learning. Ramsden emphasizes the importance of teaching in the process of student learning and places great responsibility upon the teacher for students’ choice of their approach to learning stating that teachers should choose such teaching strategies that divert students from surface learning and encourage deep learning enabling them to get actively involved into the learning process24.

2.3. The Subsystem of Assessment

The subsystem of assessment can be broken down into two major components – formative assessment and summative assessment. This distinction is made on the basis of assessment purposes which polarize into assessment for learning (or formative assessment) and assessment for decision making (or summative assessment). Researchers distinguish different purposes that assessment serves in higher education, e.g. Brown25 distinguishes three main purposes: to give a licence to proceed to the next stage or graduation (summative assessment), to classify performance of students in rank order (summative assessment) and to improve learning (formative assessment). Boud and Falchikov also distinguish three main purposes that assessment serves, but they emphasize the importance of formative assessment: assessment for certification (summative assessment), for learning (formative assessment) and for sustainable

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24 Ramsden, P., supra note 3, p. 195.
learning (formative assessment)\(^{26}\). Knight distinguishes between high-stakes assessment which is used to sum up a person’s achievement as well as provide information that can be used as performance indicators in appraising the work of teachers, departments and national systems of education (summative assessment), and assessment of lower stakes which is used to identify what learners need to do in order to improve their work (formative assessment). The author stresses that essential in formative assessment is providing useful feedback\(^{27}\). This is supported by Hattie and Timperley who state that assessment feedback to students is critical and means “gaining information about how and what they understand and misunderstand, finding directions and strategies that they must take to improve, and seeking assistance to understand goals of the learning”\(^{28}\).

Studies into assessment practices ranging over ages (from 5-year olds to university undergraduates), across several school subjects, and over several countries yield enough proof that assessment feedback provided to students through formative assessment raises learning standards. Black and William carried out a review of over 250 studies into formative assessment (by the term ‘assessment’ the authors refer to all activities undertaken not only by teachers, but also by their students in assessing themselves, which provide information to be used as feedback to modify the teaching and learning activities in which they are engaged) and report that innovations that include strengthening the practice of formative assessment produce significant, and often substantial, learning gains\(^{29}\). This is supported by Knight\(^{30}\) who reports that review of 681 research publications on formative assessment revealed that it improves learning.

### 3. Features of Effective Feedback

As it has been mentioned above, a change within a subsystem produces a change in other subsystems. This means that if feedback is improved, this should produce a positive change in student learning; therefore, to make feedback the most powerful influence on learning, it is essential to ensure that it is effective. Thus, what makes feedback effective?

Research literature overview shows that characteristic features of effective feedback are varied; however, some features have been found to be repeatedly used by researchers to define effective feedback. To summarise, to be effective feedback needs to be clear and understandable, purposeful, motivating, compatible with students’ prior knowledge, provide links to the gaps in their learning that have to be closed as


\(^{30}\) Knight, P., *supra* note 27, p. 8.
well as be compatible with modes of receiving feedback (Tummons, Brown, Black and William, Hattie and Timperley, Nicol and Macfarlane-Dick, and others). Let us analyse the characteristic features mentioned above in more detail.

3.1. Purposefulness of Feedback in the Process of Teaching and Assessment

The main purpose of feedback to improve student learning more specifically means “to reduce discrepancies between current understandings and performance and a goal”. To this end, feedback provided to students as part of the teaching process should direct students to strengthen their effort and promote their active participation in the study process. To maximize positive effects of feedback to achieve higher learning standards is a challenging task which involves active participation of both teachers and students. Students can reduce the discrepancy by increased effort and employment of more effective strategies or by abandoning, blurring or lowering the goals, whereas teachers can do this by providing appropriate challenging and specific goals and assisting students to reach them through effective learning strategies and feedback.

Black and William state that as part of assessment process feedback has a positive impact on learning when it is aimed at students’ weaknesses and gives them specific guidance on them, preferably without any overall marks. As assessment feedback is related to testing, the way in which test results are reported back to learners is a critical feature: feedback to learners should be about the particular qualities of his/her work, including both their strengths and weaknesses, contain advice on what he/she can do to improve, and should avoid comparisons with other learners.

3.2. Feedback, Student Motivation and Participation

Psychological research proves that the way people see themselves is different from how they are seen by others, i.e. people see themselves more positively than others see them. This explains why delivering feedback, especially critical feedback, may cause strong emotional reactions (including defensiveness, rejection of feedback, perception of feedback as a personal attack, threatening one’s ego) all of which may hinder learning. Research demonstrates that improvement of learning depends on cognitive and emotional

32 Brown, G., supra note 25, p.17.
33 Black, P.; William, D., supra note 29.
34 Hattie, J.; Timperley, H., supra note 19.
36 Hattie, J.; Timperley, H., supra note 19, p. 86.
37 Black, P.; William, D., supra note 29.
dynamics (i.e. how we think and how we feel) that can interfere with a person’s ability to process, learn from and respond constructively to feedback. Therefore, it is essential to ensure that feedback is delivered in such a way that it motivates learners, engages them in the process of study and does not undermine their self-esteem.

This leads to the question: what kind of feedback is motivating, engaging and supporting self-esteem? Summarising research studies, to be motivating and engaging feedback should be 1) clear and understandable, i.e. each learner – effective/high ability learners as well as less effective/low ability learners – should understand the main learning goals and what is expected to be achieved, i.e. learning outcomes, 2) formative in nature, i.e. it should inform students what they have achieved and how to improve, 3) constructive, i.e. it should be set in the context of the learning outcomes and focused on the problem in student learning (e.g. the task or task learning) rather than on the person, given in such a way it will make a positive impact on students’ self-esteem, 4) directing students to reflect on their learning and on their progress and foster their self-assessment skills, 5) provided in suitable surroundings, i.e. classroom climate is critical as feedback will foster student participation only in climates where errors and analysis of problems in learning are seen as leading to future learning, 6) provided using different forms both oral and written, 7) provided regularly, and 8) delivered in line with the mode students receive feedback. The latter aspect is important if teaching occurs in a multicultural environment, i.e. teachers should keep in mind that feedback is differentially received by students coming from different cultures. For instance, students from collectivist cultures (e.g. Asian, South Pacific nations) prefer indirect and implicit feedback, more group-focused, and not at self-level, whereas students from individualist cultures (e.g. the USA) prefer more direct feedback, seek feedback using direct inquiry, and favour more individual focused self-related feedback. Therefore, teachers should view feedback from an individual’s to whom it is directed perspective.

3.3. Compatibility with Students’ Prior Knowledge and Links to the Gaps in Their Learning

To be compatible with students’ prior knowledge and to provide links to the gaps in student learning means that feedback delivered to students should, basing on what has already been achieved, support students to close the gap in their learning process between the achieved and what has been set to be achieved. It can be done in different ways, e.g. supporting students to take action soon after feedback is produced (through their engagement in the act of production of a piece of work or through providing opportunities to repeat the same ‘task-performance-feedback cycle’ by allowing resubmission). It can also be done by delivering feedback which should answer three questions asked by

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a teacher: “Where am I going?” ("Feed up"), “How am I going?” ("Feed back") and “Where to next?” ("Feed forward") on four levels: on the level of the task, process, self-regulation and self level 42. Answering the first question a critical aspect of feedback is the information given to students and their teachers about the attainment of learning goals related to the task or performance. To succeed, goals should be well defined and challenging. If so, feedback directs students towards making changes in their learning as it enables them “to set reasonable goals and to track their performance in relation to their goals so that adjustments in effort, direction and even strategy can be made as needed” 43.

Answering the second question requires a teacher (a peer, task or self) to provide information relative to a task or performance goal and related to some standard. In this case feedback acts as a component of assessment as answering this question usually leads to testing. When used as assessment feedback it is effective when it includes information about progress and how to proceed in order to make progress, finding directions and strategies that students must improve, and seeking assistance to understand the learning goals.

Finally, according to Hattie and Timperley feedback has the most powerful impact on learning through answering the question “Where to next?” While answering this question information that leads to greater learning opportunities, including more self-regulation over one’s learning process, deeper understanding, more strategies and processes to work on the task, etc. may be provided to students. This is supported by Black and William who point that learners must be given the means and opportunities to work with evidence of their difficulties 44.

Thus, to provide effective feedback is a challenge to teachers as they have to provide information so as to address the three feedback questions and direct students to asking the same feedback questions themselves.

Conclusions

1. Basing on general systems theory, a change within a subsystem produces an impact on other subsystems, and through the interaction of the subsystems the larger system in which subsystems operate experiences a change, too. Feedback is a structural part of both the subsystem of teaching and of assessment that operate within the larger system of studies. Therefore, to promote student learning in higher education it is necessary to improve feedback provided to students.

2. As a structural part of the teaching process feedback is information provided to learners by an agent (e.g. teacher, peer, book, parent, self, experience) regarding aspects of one’s performance or understanding. It occurs typically after instruction that seeks to provide knowledge and skills or to develop particular attitudes. As a structural part

42 Hattie, J.; Timperley, H., supra note 19, p. 87.
44 Blake, P.; William, D., supra note 29.
of the subsystem of assessment feedback is information provided to students about how and what they understand and misunderstand, giving directions and strategies that they must take to improve, and providing assistance to understand the goals of learning.

3. It has been established by research that feedback is a powerful influence on student learning when it is effective. To be effective, feedback needs to be clear and understandable, purposeful, motivating, compatible with students’ prior knowledge, providing links to the gaps in their learning that have to be closed as well as be compatible with modes of receiving feedback. Effective feedback can increase student effort and motivation or engagement to reduce the discrepancy between what is understood and what is aimed to be understood, and can foster their learning. This is possible to achieve if educative process in higher education is directed so as to assist students to identify the gaps in their learning through answering the question “How am I going?” inseparable from the question “Where am I going?” and to provide remediation in the form of further steps to be take through answering the question “Where to next?”.

References


STUDENTŲ MOKYMOSI SKATINIMAS GRĮŽTAMUOJU RYŠIU AUKŠTAJAME MOKSLE

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Santrauka. Studentų mokymosi, orientuoto į aukštus studijų pasiekimus, tema pastaruoju metu tapo aktualia mokslinių diskusijų tema tiek užsienyje, tiek ir Lietuvoje. Jau atlikti moksliniai tyrimai, skirtingų studentų mokymosi patirties, jų požiūrių į studijų metu vykstantį mokymąsi ir mokymosi pasiekimų analizei, išanalizuoti mokymosi modeliai ir studentų mokymąsi skatinančios dėsčymo strategijos, nustatytų velkinių, turintys įtakos dėsčymo kokybei ir studentų mokymuisi, nemažai dėmesio skirta mokymosi vertinimui aukštajame moksle (Prosser, Trigwell; Marton, Booth; Ramsden, Marton, Saljo; Race, Elton, Johnston; Knight, Yorke; Burkšaitienė, Teresevičienė; Zuževičiūtė, Teresevičienė; Gedvilienė; Šliogerienė; Mačianskienė ir kt.). Tačiau Lietuvoje dar nėra sistemiškai išanalizuotas studentų mokymosi skatinimas dėl studentų mokymosi įtakos dėsčymo kokybei ir studentų mokymuisi. Šiame tyrimo objektas – dėsčytojo suteikiamas grįžtamasis ryšys studijuojantiesiems aukštumo mokslai institucijose. Tyrimo tikslas – išanalizuoti dėsčytojo suteikiamos grįžtamajos kojų ir apie studentų mokymąsi vaidmenį skatinant mokymąsi. Tyrimo metu nustatyta, kad: 1) būdamas dėsčytojo suteikiamas grįžtamasis ryšys studijuojantiesiems aukštumo mokslai institucijose, apibrėžti dėsčytojo suteikiamos grįžtamajos kojų ir apie studentų mokymąsi vaidmenį skatinant mokymąsi. Tyrimo metodai – remiantis bendrąja sistemos teorija apibūdinti studijų sistemos struktūrą aukštumo mokslai institucijose, apibrėžti dėsčytojo suteikiamos grįžtamajos kojų ir apie studentų mokymąsi vaidmenį skatinant mokymąsi. Tyrimui atliekant šiuos uždavinius būtina naudoti teorines, meta-analizės ir sisteminės analizės metodus. Remiantis bendrąja sistemos teorija, aukštumo mokslai institucijose esantį studijų sistemą susideda iš trijų tarpusavio sąveikaujančių posistemių – mokymosi (studijavimo), dėsčymo (mokymo) ir vertinimo. Pavyzdžiui, viename posisteminěm iš tiesų ir studijų sistemos, kurios veikia veikia posisteminė, pokyčių. Dėsčytojo suteikiamos grįžtamajos kojų ir apie studentų mokymąsi vaidmenį skatinant mokymąsi. Tyrimui atliekant šius uždavinius būtina naudoti teorines, meta-analizės ir sisteminės analizės metodus.
Moksle problematika pateikiama dėstytojo suteikiamo efektyvaus grįžtamojo ryšio samprata: efektyvus grįžtamasis ryšys yra apibūdinamas kaip aiškus ir suprantamas, tikslingas, motyvuojantis, suderinamas su studentų turimomis žinomis, suteikiantis ryšį tarp to, kas išmokta ir dar neįmokta, ir susietas su studentų grįžtamojo ryšio priėmimo ypatumais. Grįžtamasis ryšys bus efektyvus ir turėtų didžiausią įtaką mokymuisi aukštojo mokslo institucijoje tada, kai studentai skatiniats atsakyti į tris pagrindinius klausimus: „Kaip aš einu?“, „Kur link aš einu?“ ir „Ką turiu daryti toliau?“. Pastarasis iš jų turi lemiamos įtakos grįžtamojo ryšio efektyvumui.

Reikšminiai žodžiai: grįžtamasis ryšys, mokymas (dėstymas), vertinimas, studentų mokymasis (studijavimas), aukštas mokslas.


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