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A Synthesis Review of Education Research on Learning Outcomes

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Introduction

Discussions of the outcomes of education and learning processes are recurrent in education research. Especially since education expanded to encompass entire populations and continents, questions about optimizing resource use and maximizing outputs and outcomes of education have been abundant. From the turn of the millennium, studies aiming at measuring and improving the performance of education systems have proliferated and institutionalized indicator-based learning goals as a preferred policy tool (European Education and Culture Executive Agency et al., 2022; OECD, 2008). This background informs our review of the research literature devoted to the established concept of learning outcomes (Harris & Clayton, 2019). The review draws from and contributes to the ongoing CLEAR research project.¹ While the concept of learning outcomes is widely used in the literature, exactly how, using what criteria and based on what types of assumptions is it used in research debates is not commonly understood; despite potentially vast implications for policy, research and practice. To contribute to this knowledge, we review the research literature in five sequential steps. First, we present the history and the background of the concept of learning outcomes to highlight its current usage in policy and research and to achieve a consistent terminology which allows us to develop a straightforward research strategy. Second, we present our core objectives and main research questions based on the results of the previous section. Third, we outline our methodological approach, its design, selection criteria, coding and quality assessment. Fourth, we

present the results of our review and describe how we have synthesized the initial data. Fifth, we discuss our findings in relation to the main research questions and to the overall aims of this volume.

Learning outcomes: The conceptual background

When conceptualizing the term ‘learning outcomes’, it is useful to first depart from a distinct conceptual separation of education and learning. Education refers to a relational process between individuals and their surrounding environment (the world) in ‘a process of self-production through the appropriation of the world’ (Masschelein & Ricken, 2010, p. 129). This means that both the processes and their results are personal and collective developments and, thus, difficult to assess. Indeed, apart from its other functions, such as socialization, cultural transmission and integration, education is seen primarily as a self-reflective activity which functions to construct and form the self in complex meaning-making processes from childhood to old age. Although there is a vast conceptual richness related to education, a prominent understanding distinguishes between material and formal theories of education and their combination as categorical theories (*Bildung*). Material theories prioritize content knowledge over general competencies of the learner, whereas formal theories focus on the competencies of the learner. Categorical theories combine both views (Hopmann, 2000; Klafki, 1994; Westbury, Hopmann & Riquarts, 2000). According to this tradition, education’s goal is to foster individuals’ ability to take up their own interests as part of society (self-determination), to actively participate in and contribute to the development of society (participation) and to act responsibly in society with regard for those with limited opportunities for self-determination and participation (solidarity).

Learning, on the other hand, is defined as long-term behavioural change due to practice and/or experience. The central characteristic of learning is ‘experience’ which helps individuals adjust to their surrounding environment. Learning is displayed in the behaviour or in the activities of a person, whether observable or not. It takes place in different settings: (1) in the institutionalized system of (compulsory) *formal education*, from kindergarten up to university; (2) in *non-formal education* settings, meaning non-compulsory learning with educational objectives, including lifelong learning, open youth work and community-based programmes; and (3) in *informal education* settings which refer to unplanned

and unstructured learning processes. The latter occur in different environments and are usually not intended by the learners.

A broader – normative/humanistic – understanding of education is still widely applied in education practice, policy and research. Yet, it is somewhat sidelined in public and policy debates, as several developments indicate. Concepts of education such as *Bildung* are not fully operationalizable, in terms of empirical assessment of acquisition and measurement of achievement. Consequently, learning, which is deemed to be more easily operationalized and measured, has become the focus of attention in education policy and research (Biesta, 2009; 2015). Also, the growing acceptance of non-formal and informal learning and the increasing role of mass media (including digital devices) in developing new, yet uncertified skills and competencies, calls for measurement and recognition of (prior) learning and emphasizes the need for clearly definable learning outcomes. On top of that, the prominence of large-scale assessment studies, such as the Programme for International Student Assessment (PISA), the Progress in International Reading Literacy Study (PIRLS) and the Programme for the International Assessment of Adult Competencies (PIAAC), encourage the search for ‘evidence-based’ or ‘scientific’ models of education.

Beyond this basic distinction between education and learning, conceptualizations of learning outcomes have further narrowed the concept and understanding of learning to concentrate on what has been termed ‘active learning’ (Bonwell & Eison, 1991). The main discernment is that between the traditional (i.e. cognitive or behaviourist approaches to learning) and constructivist approaches, with the latter being seen as active learning. The assumption is that only active learning can offer a ‘new paradigm’ for criteria-based definition of learning outcomes (CEDEFOP, 2009; Grootings & Nielsen, 2009).

In this context, the term ‘learning outcome’ gained currency in recent decades to refer to a specific understanding of learning and teaching as modelled on a process-product approach. As such, learning outcomes focus specifically on intentional activities in teaching and learning which can be statistically quantified and measured. According to Hussey and Smith (2002, p. 223), learning outcomes are ‘the observable products of the activities of the educators’, that is, ‘the products of the learning process within the pupil’.

Overtime, learning outcomes have become indissociable from their assessment, both conceptually and historically. The pioneering work by Bloom and colleagues (1956) can be seen to have set the stage for the definition and description of

objectives across all education levels. However, different conceptualizations of learning outcomes have also become influential (see CEDEFOP, 2009). For example, whereas Bloom and colleagues categorized knowledge and skills along cognitive, affective and psychomotor dimensions, others, such as Flavell, Miller and Miller (1993), have discussed learning outcomes as understandings of meta-competence. Flavell and colleagues (1993) distinguished between self-appraisal, as reflection about one's knowledge and abilities, and self-management, being the ability to plan and apply strategies accordingly.

Different conceptualizations can be attributed to different contexts. In some contexts, including the UK, a more functional approach to learning outcomes has been prominent, particularly in developing outcomes for vocational education and training qualifications through cooperation between national bodies and stakeholders. At the European level, the European Qualifications Framework (EQF) recognized cumulative levels of knowledge, skills and competencies. These were deemed to render qualifications more transparent, primarily in the context of making lifelong learning more inclusive (European Commission, 2008). Also, the European Key Competences framework, formulated as part of the Education and Training 2010 initiative, included cognitive and interpersonal skills and attitudes as the main categories (European Commission, 2005). Beyond Europe, two main initiatives proved significant for the conceptualization of learning outcomes. First is the Tuning project in Canada, which developed a classification of generic learning outcomes conveyed in terms of instrumental, interpersonal and systemic competencies (Adam, 2004). The second is the DeSeCo project of the OECD (2005; see also Rychen & Salganik, 2003), which set out to develop a classification of key competencies along three different categories – use of tools interactively, interacting in heterogeneous contexts and acting autonomously.

In summary, conceptualizing learning outcomes has a rather long history in the fields of educational and psychological research (Murtonen, Gruber & Lehtinen, 2017). Essentially, it was behaviourism which emphasized the advantages of a clear identification and measurement of learning and the need to produce observable and measurable outcomes (see also Chapter 2 in this volume). In more recent discussions, the idea of active learning has been propagated as the basis for defining learning outcomes which are observable and measurable by statistical means. The definition of learning outcomes must also be seen in a policymaking context which has gone global and serves multiple purposes, not simply pedagogical goals (CEDEFOP, 2024). Rather, learning outcomes are supposed to inform education policies and render education and training

more transparent. They, thus, offer reference points for stakeholders (especially employers), facilitate mobility and cooperation across European, national and regional levels and, last but certainly not least, consolidate accountability and governance of education.

At the level of practice and research, learning outcomes remain tied to a taxonomy or hierarchy of learning levels: knowledge, comprehension, application, analysis, synthesis and evaluation (Bloom et al., 1956). The approach is simple but persuasive in stating that clearly defined objectives will guide teachers and students and explain how student achievement will be measured (Melton, 1997). Indeed, there has been a move from the past conflation of instructional objectives with learning outcomes. Later studies have begun, even if often only tentatively, to distance themselves from behaviouristic approaches (Murtonen, Gruber & Lehtinen, 2017). They acknowledge the complexity of the relationship between knowledge, skills and attitudes (originally understood mostly as separate dimensions), the role of motivation and the distinction between higher- and lower-order thinking skills and learning processes (Harden, 2002). Yet, among researchers, practitioners and policymakers, the broad assertion that clearly stated objectives can indeed guide teachers and students in their activities remains almost irresistibly attractive. This postulation has been upheld by authors originating from different academic disciplines and speaking about different topics. Some hold that learning outcomes play a guiding role as they ‘provide an intuitive, user-friendly and transparent framework for curriculum planning, teaching and learning and assessment’ (Harden, 2002, p. 152). For others, learning outcomes are expressed in a form ‘which enables learners to know at the commencement of a course or module, what it is they are expected to achieve in relation to subject content, personal transferable skills and academic outcomes’ (Allan, 2006, p. 104). On top of that, learning outcomes ‘should help citizen science practitioners, researchers, and evaluators in designing projects and in studying and evaluating their impacts’ (Phillips et al., 2018, p. 1). From this point of view, it is undeniable that

[L]earning outcomes are at the forefront of educational change. They represent an adjustment in emphasis from *teaching* to *learning* typified by what is known as the adoption of a student-centred approach in contrast to the traditional teacher-centred viewpoint. Student-centred learning produces a focus on the teaching – learning – assessment relationship and the fundamental links between the design, delivery and measurement of learning.

(Adam, 2006, p. 3–4, original emphasis)

This change has been linked to the requirement for more precise curriculum design and the recognition that more effective and varied learning methods benefit students – a combination which has increased the demands to convey knowledge, understanding, skills and other traits inside qualifications and their components through learning outcomes (Otter, 1995). In parallel, as stated by Hussey and Smith, '[t]he greatly increased public expenditure [on education in the mid-20th century] encouraged the feeling that educators had to make their practices more *scientific* and accountable' (2002, p. 222, original emphasis). This has led to the development of criteria for quantifiable assessment of educators' work. It is, thus, obvious that learning outcomes are not strictly pedagogical apparatuses or 'statements of what a learner is expected to know, understand and/or be able to demonstrate at the end of a period of learning' (Adam, 2006, p. 2). Rather, they are also used as managerial tools for performance management and, currently, encompass all subject areas and most, if not all, education and training levels. In this regard, learning outcomes are *pedagogical* tools in the sense that they supposedly provide a better way of teaching and learning; they are *managerial* instruments in that they aim at enhancing academic mobility and comparability between courses and education institutions; and they are also conceptualized as *socio-economic* indicators of development (see Cumming & Ross, 2008; Karseth & Solbrekke, 2016). There is, however, a considerable number of critical voices addressing the potential troubles connected to clear definitions of learning outcomes. For the sake of clarity and in accordance with the three functions of learning outcomes mentioned above, we distinguish between *pedagogical-scientific*, *economic-managerialist* and *political-technocratic* criticisms.

With reference to the pedagogical-scientific criticism, the main critique is directed towards the mission of the modern university. Universities are failing to achieve their mission insofar as students are successful only in achieving the predetermined learning objectives, whereas the core objective of higher education 'is to produce something new and open opportunities of novel thinking that cannot be stated in advance' (Murtonen, Gruber & Lehtinen, 2017, p. 124). Further, as Murtonen and colleagues observe, while the cognitive turn has given rise to substantial critiques of behaviourist approaches, the proportion of publications endorsing behaviourist approaches to learning outcomes is more than four times larger than the proportion which is critical of such approaches (Murtonen, Gruber & Lehtinen, 2017). More so, any behaviourist approach to learning is incapable of accounting for longer, more complex and abstract learning processes: all reduce knowledge to external behaviour which represents more easily observable, describable and measurable phenomena. Therefore,

a behaviourist approach appears to be ill-suited to provide definitions of all learning outcomes, particularly those of higher order learning (Murtonen, Gruber & Lehtinen, 2017). In addition, at a more operational level, it is difficult to see how each and every potentially relevant learning outcome (e.g. skills such as creativity, communication, critical thinking) could be assessed so as to satisfy the psychometric premises of reliability (consistency and stability over time and across different contexts), validity (measurement of what is intended to be measured), objectivity (unbiased or subjective judgements of the assessors), sensitivity (ability to detect meaningful differences between individuals or groups) and responsiveness (ability to detect changes in learning over time or in response to educational interventions).

In turn, the economic-managerialist criticism tracks the roots of the learning outcomes assessment movement back to Taylorism and theories of scientific management. Learning outcomes are seen to be an extension of the standards of the efficacy movements in economics (Bennett & Brady, 2012, p. 147) and place emphasis on employability and investment return. From the managerialist point of view, it is expected that the investments made in funding education will be expressed in measurable and comparable outcomes (Clarke, 2018; Holmes, 2013). At the intersection of both the pedagogical and the managerialist criticisms, the common understanding seems to be that, while learning outcomes may have been instrumental in the development of management modes which ensure the comparability of courses and degrees, they have yet to produce substantial changes in the way teaching-learning processes are carried out in practice (Friedrich, Prøitz & Stensaker, 2016; Owusu-Agyeman, 2017).

The political-technocratic criticism is the most vivid strand. First and foremost, it is connected to one of the most ambitious initiatives in the definition and measurement of learning outcomes via the large-scale assessments of education, like PISA. The current coverage of PISA extends well beyond Europe, encompassing a growing number of countries across the world (eighty-five countries in its 2022 round). In the words of Andreas Schleicher, its initiator and Director for Education and Skills at the OECD:

The idea behind PISA lays in testing the knowledge and skills of students directly, through a metric that was internationally agreed upon; linking that with data from students, teachers, schools and systems to understand performance differences; and then harnessing the power of collaboration to act on the data, both by creating shared points of reference and by leveraging peer pressure. ... Over the past two decades, PISA has become the world's premier yardstick for comparing quality, equity and efficiency in learning outcomes across countries, and an influential force for education reform. It has helped policy makers lower

the cost of political action by backing difficult decisions with evidence – but it has also raised the political cost of inaction by exposing areas where policy and practice have been unsatisfactory.

(Schleicher, 2019, p. 3–4)

It is undeniable that PISA has become a benchmarking device for many education agents around the world and that it has led to countless efforts to improve educational systems based on its results and the subsequent reactions, the so-called ‘PISA-shocks’. However, as argued by Gorur (2016), PISA has become more than a simple yardstick that provides descriptions of the educational status quo of a given set of countries: it also plays a performative function creating new educational conditions and, more strikingly, it has become a project of legibility. The core of what Gorur terms as ‘seeing like PISA’ phenomenon is that the application of sophisticated measurement techniques has enabled the development of international indicators which, while used in wide-ranging comparative assessments, are actually quite reductionist in their understanding of reality:

By *flattening* education into a standardised, decontextualised phenomenon, education à la PISA has become portable. Its ideas and philosophies are seen as being readily and easily transportable across the world, so that lessons from Shanghai and Singapore can be implemented in Azerbaijan or Peru. ... PISA has influenced the very fundamentals of education – curricula and assessment. A new normativity – a morality, even – has come to be imposed by PISA, and absorbed by PISA participants. This is not just about adopting a specific policy ... it is about putting in place an ongoing system of ever-increasing monitoring and data generation, and about fundamentally changing the structures and systems of administering and governing schools. It is about changing the very culture of a society by influencing the curriculum.

(Gorur, 2016, p. 607–8, original emphasis)

In Biesta’s words, the ‘common sense view about the purpose of education is the idea that what matters most is academic achievement in a small number of curricular domains, particularly language, science and mathematics’ (2009, p. 37). This both feeds into and is fed by large-scale international assessments, above all PISA. That is, the notion of education is narrowed to learning for measurable results in a small set of subjects. This results in what Biesta calls the ‘*learnification* of education: the transformation of everything there is to say about education in terms of learning and learners’ (Biesta, 2009, p. 38, original emphasis). The measurement of educational outcomes becomes the norm with which to direct and assess educational policies and practices, and this development risks valuing

what is measured rather than measuring what is valued (Biesta, 2009, p. 43). However, at a deeper, more structural level, learnification articulates with what Tröhler (2013) identifies as the movement towards the establishment of a technocratic and technological educational culture which, based on the ideals of programmed instruction and human capital enhancement, would be able to strengthen countries' position in the world order.

While we take note of the various strands of criticism, we also acknowledge that, alongside these critical stances, there are also more positive views. Campos (2010) and Sousa-Pereira & Leite (2019), for example, discuss the relationship between students' profiles – the elaboration of which is very much dependent on learning outcomes – and initial teacher training, and put forward pedagogical proposals which are not strictly measurement-minded. With a focus on pedagogy, some researchers argue that 'student-centred learning necessitates the use of learning outcomes as the only logical approach' (Adam, 2006, p. 12–13). Despite the fact that the relationship between learning outcomes and achievement has typically been approached from a narrow, quantitative perspective, the argument is that, provided one is able to differentiate between causes and consequences, the various definitions of learning outcomes, modes of teaching and academic results are central when trying to understand what is going on in any given educational system.

Having summarized various conceptualizations of learning outcomes, we clarify that the main argument in this chapter is not one against definable learning outcomes. Rather, it is against one-sided models which account for what is learnt premised only on what can be measured, datafied, quantified and, thus, instrumentalized for policy purposes. We next outline our main objectives and core research questions before presenting our detailed review of the various definitions of learning outcomes on which our argument is based.

Objectives of the review

The primary objective of the synthesis review is to answer the following questions:

- How are learning outcomes defined?
- What specific theoretical assumptions do the various definitions entail?
- What is the empirical operationalization of the definitions?
- Which function do they fulfil?
- Who are the main stakeholders involved in defining learning outcomes?

Method

In the present study, we undertook a synthesis review which was as close to a systematic review (Grant & Booth, 2009) as possible. We employed an exhaustive search strategy across diverse scholarly databases to identify pertinent studies germane to the research inquiry (Page et al., 2021; Zawacki-Richter et al., 2020). In particular, we applied a configurative synthesis which ‘consists of the deliberative configuring of data by reviewers into patterns to create a richer conceptual understanding of a phenomenon’ (Newman & Gough, 2020, p. 5). The configurative synthesis perfectly aligns with the aim of the CLEAR research project to investigate the processes and interactions which lead to the development of learning outcomes.

The data collection took place on 2 April 2024 and had four stages. First, the research involved extracting results from a comprehensive search conducted across twenty-eight databases. Second, the results were saved within the EBSCO² platform and exported to a .csv file; the platform automatically removed exact duplicates from the retrieved results. Third, based on relevance, the initial count of 350 results was reduced to 225 distinct findings for further consideration. Fourth, this process was meticulously repeated, confirming the integrity of the dataset, as evidenced by the consistent count of 225 valid results across all search pages examined.

Selection process and methodology

The selection process involved several stages, beginning with screening titles and abstracts to identify relevant studies. Full-text articles were then reviewed to confirm their inclusion based on five predefined criteria, requiring studies to (1) be published in English so that the meaning is not lost in translation; (2) address the concept of learning outcomes and (under)achievement in the context of education; (3) engage with educational contexts within the delineated eight countries participating in the CLEAR project – Austria, Bulgaria, Finland, Germany, Greece, Italy, Portugal and Spain; (4) explicitly reference the concept of learning outcomes; and (5) encompass a spectrum of study types, including empirical investigations, theoretical expositions and literature syntheses. Bias mitigation was paramount throughout the study, with conscientious efforts to minimize potential biases.

Search terms

To navigate the search through literature databases, we employed the Boolean operators 'AND' and 'OR'. Based on the inclusion criteria, the Boolean phrase was: 'learning outcomes' AND 'educational achievement' OR 'academic achievement' OR 'underachievement' OR 'educational attainment' OR 'educational success' AND 'Germany' OR 'Spain' OR 'Finland' OR 'Austria' OR 'Portugal' OR 'Italy' OR 'Bulgaria' OR 'Greece'. Proximity operators were used when appropriate and search terms were truncated using the proper conventions for the given database or search engine syntax to include variations in the endings of words and spellings. Terms from different categories were connected with OR within each category and by AND between categories.

Search databases

Electronic Databases:

- a) ERIC
- b) Education Source Ultimate
- c) Academic Search Ultimate
- d) APA PsycArticles
- e) APA PsycBooks
- f) APA PsycInfo
- g) Applied Science & Technology Index (H.W. Wilson)
- h) Business Source Ultimate
- i) Communication Abstracts
- j) Criminal Justice Abstracts
- k) EconLit with Full Text
- l) Fonte Acadêmica
- m) GreenFILE
- n) Historical Abstracts
- o) Humanities Abstracts (hma)
- p) Library & Information Science Source
- q) MathSciNet via EBSCOhost
- r) MLA Directory of Periodicals
- s) MLA International Bibliography with Full Text
- t) Psychology and Behavioral Sciences Collection
- u) Regional Business News
- v) Sociology Source Ultimate

- w) Teacher Reference Center
- x) The Serials Directory

Other types (specific collections or archives):

- a) Architectural Digest Archive
- b) eBook Collection (EBSCOhost)
- c) eBook EngineeringCore (EBSCOhost)
- d) eBook Subscription Psychology/Psychiatry Collection
- e) eBook University Press Collection (EBSCOhost)

Usage of other sources

While we have not explicitly excluded research registers, websites, dissertations or regional bibliographic databases, our primary focus was on electronic databases and specific collections or archives accessible via the EBSCO platform. In our experience, electronic databases are most likely to provide ready and comprehensive access to relevant, high-quality academic articles. Accessing and reviewing other research registers, websites, dissertations and regional bibliographic databases would have required additional time and resources, which were limited at the time of the review.

Manual research

We have not conducted a comprehensive manual research, in terms of systematic review methodology, but tried to ensure that all relevant publications related to learning outcomes in the field of education were part of the review process.

Results

In the following section, we present the results of the synthesis review. The initial search yielded 225 papers which underwent meticulous review using the collective expertise of the authors. Of the 225 papers, eight were written in a language other than English, forty did not explicitly refer to the contexts of the CLEAR countries (although CLEAR countries may have been included in these papers' meta-analyses), five were duplicated and four could not be retrieved in full. These fifty-seven papers were excluded from further analyses. We next share our analytical observations from each phase of the four-stage review process.

With regard to the first review phase, the initial 225 articles were on research in different research fields and published in different scientific journals. A majority was published in interdisciplinary research fields combining education science and computer science (20 per cent) (e.g. *Computers & Education*, *Education & Information Technologies*, *Journal of Computer Assisted Learning*) or education science and psychology (15 per cent) (e.g. *Frontiers in Psychology*, *Educational Psychology Review*, *European Journal of Psychology of Education*). A vast number of articles were also published in the fields of learning and instruction (20 per cent) (e.g. *Instructional Science*, *Learning & Instruction*) or in general education science (19 per cent) (e.g. *Education Sciences*, *Educational Research Review*, *Higher Education Research & Development*). Somewhat fewer (around 4 per cent) were published in the fields of policy studies (e.g. *OECD*, *Prospects*), health education (e.g. *Nurse Education Today*, *Medical Teacher*), engineering education (e.g. *European Journal of Engineering Education*, *International Journal of Engineering Education*) and management and accounting (e.g. *British Accounting Review*, *College Planning & Management*). Other research fields were rather marginally covered. This first observation shows that learning outcomes are tightly linked to measurable (computer science), observable (educational psychology) and instrumental (learning and instruction) phenomena.

During the second review phase, of the 168 papers remaining after disregarding fifty-seven papers on the grounds described above, only 111 papers fulfilled the criteria of more or less directly referring to the concept of learning outcomes. Analysis of the 111 articles revealed considerable country divisions. While the absolute majority of articles referred to German and Spanish educational contexts (35.0 per cent and 31.5 per cent, respectively) followed by the Finnish context (more than 20 per cent), Austria and Bulgaria were barely reflected in the research on learning outcomes, accounting for less than 5 and 3 per cent, respectively. Other countries (Italy, Portugal and Greece) were represented in around 10 per cent.

These stark country divisions can be explained in various ways, be it the different research focus or the accessibility of the journals by national research communities. However, the division not only demonstrates the underrepresentation of various educational contexts, cultures and approaches to the definition of learning outcomes, it also raises the question of how diverse institutional and policy regimes operationalize the outcomes of education and learning; that is, on what conceptualization of outcomes they are based.

In addition, our review focused on the various stakeholders involved in the definition of learning outcomes. Since all reviewed articles were written for an

academic audience, researchers were the main stakeholders in constructing the understanding of learning outcomes. They were the actors who generated the research design and operationalized the main concepts in their study. Our review observed that learning outcomes were framed within the context of academic research, quite often without specific mention of any direct input from external stakeholders in their definition. While most of the articles did not explicitly discuss the involvement of stakeholders in the explanation and measurement of the results from education, school teachers, university lecturers and other categories of academic staff were implicit actors in providing indicators for the conceptualization and, more often, the measurement of student achievements. While all inquiries relied on the cooperation of educators, only one article (Mora et al., 2020) described the research methodology as collaborative action research. This was understood as a process where researchers and teachers were team members with equal authority: they shared a goal and brought their different expertise to the partnership (see Jones & Stanley, 2008). Most often, educators were assigned the role of implementing the research instruments and quantitatively assessing the results. Young people, who are supposed to have the most stake in the educational process, are mentioned in all papers but as objects, not as subjects, of the research interventions. We find this to be a significant oversight of their role in constructing the meaning of learning outcomes.

In the third review phase, we excluded another seventy-two papers. These were related to learning outcomes but used the term without providing any explicit clarification, definition or elaboration. In the remaining thirty-nine articles, the term 'learning outcomes' was used more often, yet only in reference to other concepts and with a rather implicit or undifferentiated meaning – presupposing that the readers know what is meant by it. There are four exceptions, which we will discuss later. Generally, there seems to be an understanding among the diverse research communities that what is meant by learning outcomes is common sense so there is no need to define it. Also, often, the term 'learning outcomes' was used together with verbs such as *acquire*, *achieve*, *enhance*, *improve*, *increase*, *alter* and *adjust*. Such connections assume a dynamic and malleable nature of learning outcomes, one that can be modified by external interventions. This purely instrumental assumption conceives of learning as a self-evident, self-purposeful and externally governable process. Furthermore, learning outcomes were discussed in relation to (1) internal (emotional, cognitive, psychological) individual capabilities, motivations and performances, as well as in relation to (2) external (subject-independent) learning environments (class, peers, teachers) and teaching/didactic techniques. This is apparent in the work of some

of the most cited and influential authors who have linked learning outcomes to achievement emotions (Pekrun, 2006; Pekrun et al., 2007; 2017) and learner's motivation (Keller, 2008; 2010) on the internal level, and to interactive learning environments (Renkl, 2015; Renkl & Atkinson, 2007) and classroom techniques (Kallio & Metsärinne, 2016; Metsärinne & Kallio, 2014) on the external level. Consistent with educational psychology, such concepts of learning outcomes show the predominant influence of behaviourist assumptions and classroom micro practices. By observing both internal and external factors, the articles focused on how their matching enabled or thwarted the learners' achievement of better learning outcomes and what pedagogical and/or self-regulation measures could be undertaken to improve them. From this perspective, learning outcomes are conceptualized as a result of the didactic and pedagogical learner-environment relations. They are not valued or assessed as an original and complex result of the intertwining of spatial, institutional, structural and individual factors but, rather, as upgradable learner characteristics and performances.

In the fourth review phase, we reduced the scope to only four articles; all of which provided direct, albeit still instrumental (i.e. measurable), definitions of learning outcomes. The authors of the four selected papers described learning outcomes as:

- a composition of (1) the grade point average of all courses the student had taken, (2) credits gained per year and (3) self-evaluated learning (Tynjälä et al., 2005);
- objective (students' ability to solve realistic problems) and subjective (perceived performance and perceived competence) outcomes (Krause, Stark & Mandl, 2009);
- the increased understanding and effectiveness in opportunity recognition, creativity and coping with uncertainty, risks and the liabilities of newness (Hytti et al., 2010); and
- competence gain and satisfaction in online environments (Heckel & Ringeisen, 2019).

Two of the papers providing these *ex-ante* definitions of learning outcomes used data from Germany. The other two used data from Finland. Methodologically, they combine quantitative evaluation and various forms of qualitative self-assessment such as self-perception or self-evaluation of learners. What all four articles have in common is the view that learning outcomes are affected by learners' perceptions of self-efficacy, motivation, study success, competence or performance. Taking a policy perspective on this, knowledge deficits are to be

compensated by activating young people to rearrange their learning techniques and self-expectations (Parreira do Amaral & Zelinka, 2019).

Discussion

In this section, we summarize the research results to answer our main research questions and open the discussion on the quality and definition of learning outcomes. We have come to the following conclusions:

1. Learning outcomes are seldom defined but, rather, *presumed as common-sensical attributes of learning*. There is scant evidence of conceptualizing learning outcomes outside the subject-specific requirements.
2. The *predominant theoretical assumption* underlying the definitions of learning outcomes is *behaviourism*. In our analyses, we have also found evidence of cognitivist, constructivist or skills-based theoretical assumptions although with much lower prevalence.
3. Learning outcomes are *primarily described in quantitative terms*, as measurable, quantifiable and comparable outcomes of the learning processes. For the collection of data, researchers have used various quantitative measures, including scales, confirmatory factor analyses, multiple-choice tests, regression models and experimental studies. Qualitative methods have been also used to include learner's self-evaluation.
4. The definitions of learning outcomes clearly *fulfil a pedagogical function*, which seeks to enhance the quality of instructional/didactic methods and showcase the influence of different factors on the achievement of anticipated learning outcomes.
5. Stakeholders involved in the definition of learning outcomes are rarely mentioned in the articles. Since all reviewed articles were primarily written for an academic audience, *researchers were the main stakeholders* in constructing the understanding of learning outcomes, thereby bracketing out other actors, especially young people but also parents, social parties, businesses and others.

The research conducted in the CLEAR project stands in contrast to that which we reviewed. CLEAR departs from the assumption that learning outcomes are not natural and self-evident phenomena and holds they are, instead, the result of manifold intersecting factors and people: institutional arrangements, spatial

and socio-economic determinants, discursive and socio-cultural influences, as well as individual experiences, dispositions and cognitive and psycho-emotional abilities. Indeed, we stress that learning outcomes are temporary and contingent products of the activities of multiple actors (learners, significant others, experts etc.), and not only those of educators or researchers. With a focus on the construction of learning outcomes, we account for them as multi-functional tools given the purposes of defining the levels of qualifications frameworks, setting qualification standards, describing programmes and courses, orienting curricula and defining assessment specifications. They, therefore 'influenc[e] teaching methods, learning environments and assessment practices' (CEDEFOP, 2017, p. 14). Within this multi-dimensional perspective, we consider the three functions of learning outcomes – pedagogical, managerial and *socio-economic* – particularly since these specifically student-focused expectations follow a unit of instruction usually stated in observable and measurable terms.

With an aim to stimulate further discussion, we stress that, over recent decades, both policy and research debates surrounding the quality of learning and learning outcomes have been based on inconclusive and misleading premises. What our review has demonstrated is the blatant mismatch between expectations of learning outcomes and their actual definition. While students, teachers and other involved actors are driven to constantly deliver high-quality learning outcomes, none of them is made aware of what exactly this means. What is considered as their achievement, what is left out of the picture and what educational purposes do the endless collection, evaluation and comparison of data serve? Furthermore, such expectations of learning outcomes are not fulfilled because learning outcomes have been associated with a flat understanding of learning which sidelines the life course of people, the intricacies of policy implementation, the inequalities which divide societies and the disparities between European educational contexts. Instead of doing more of the same and seeking to enhance datafiable learning outcomes, we advocate for a more comprehensive approach to learning and education. With the CLEAR project, we pursue such an approach – one which accounts for the wider purpose of educating young people and enabling them to take an active role in shaping their (learning) environments.

Notes

- 1 The research project *Constructing Learning Outcomes in Europe: A Multi-Level Analysis of (Under)Achievement in the Life Course* (CLEAR) is exploring the factors

that affect the quality of learning outcomes across European regions. It is conducted between 2022 and 2025 in eight EU countries, including Austria, Bulgaria, Finland, Germany, Greece, Italy, Portugal and Spain. For more information, please visit: <https://clear-horizon.eu/>. The project has received funding from the European Union's Horizon Europe research and innovation funding programme under Grant Agreement No. 101061155.

- 2 EBSCO is a premier provider of global research databases, e-journal subscriptions, e-packages and library technology solutions for educational institutions, corporations, government entities and public libraries.

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