How to Achieve Transparency by Applying Learning Outcomes with Educational Design?

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Abstract: One of the obstacles for virtual mobility is the difficulty of mutual recognition of certificates. There have been different efforts to meet this challenge: content-based (syllabus), workload-oriented (ECTS), and qualification-oriented approaches (EQF/NQF). While content and workload are just input-based criteria which don't provide valid information about a student's real competences, the European and national qualification frameworks don't allow for detailed recognition of single courses or other learning units of short duration.

The shift to the new paradigm of learning outcomes is a very promising approach to a sustainable solution but also a multi-speed development within different countries and institutions. A small number of forerunners are followed by many who have just begun or are still waiting for the start. To support the majority of institutions which are in or before the first phase of the change process a twofold strategy is proposed – based on guidelines for writing and a repository of best practice learning outcomes.

Learning Outcomes in the context of the VIRQUAL project

The VIRQUAL project (virqual.up.pt) had been established to encourage and to improve virtual mobility (VM) among European students by implementing requirements of the European Qualification Framework. It is expected that through the results of this project network European HE and CE institutions will find guidance, case studies and tools to integrate Virtual Mobility[1] in their practices, contributing to the construction of a realistic European Learning Space.

One of the obstacles for virtual mobility are the difficulties connected with mutual recognition of certificates. There have been different efforts to meet this challenge: content-based (syllabus), workload-oriented (ECTS), and qualification-oriented approaches (EQF/NQF). Content and workload on the one hand are input-based criteria and have proved to be insufficient for this purpose; they do not provide valid information about a student's really existing competences. European and national qualifications frameworks on the other hand were designed for comparison of large educational cycles and thus don't allow for detailed recognition of single courses or other learning units of short duration – which are central for virtual mobility.

A very promising approach is the adoption of learning outcomes instead of input-based criteria for educational planning and recognition purposes. Learning outcomes can be variably granulated, ranging from a single lesson to complete study programs. And, even more important, on a basic level they can be described in a universally valid way. To master the multiplication table is the very same competence all over the world. But, as we know from other experiences (e.g. with learning objects) standardised descriptions cannot successfully be achieved by a central or superior authority, but should be fulfilled in cooperation of as many involved institutions as possible – if the aim is to elaborate generally *accepted* descriptions.

Virtual mobility in particular and student's mobility in general are no primary goals of the typical European university. Only distance teaching and dual mode institutions have an intrinsic interest in these topics. Thus the average university might not spontaneously recognise the added value of using learning outcomes for planning and promoting study programmes. At least this is one of the conclusions we have to draw from the results of a survey we have done among universities in German speaking countries (see below). Consequently one of the first steps to pursue the global goal "to encourage and to improve virtual mobility among European students" we want to answer the following questions:

o   How can the idea of shifting from an input-oriented to the outcome-based approach be promoted among European HE and CE institutions?

o   How can this paradigm shift be supported by a European initiative?

o   And, laying the ground for dealing with the questions mentioned above, what is the current situation at European universities with respect to the implementation of learning outcomes?

The functions of learning outcomes in Higher Education

"Learning outcomes are statements of what a learner is expected to know, understand and/or be able to demonstrate after a completion of a process of learning" (EU, 2004), is one of the most widely accepted definitions of learning outcomes. This terminology also applies to the notion learning objectives which had become generally accepted within the last two or three decades. Why is it necessary now to use the term learning *outcomes* instead of *objectives*? The short answer is: This terminological shift signals the theoretical shift from teaching to learning which forms the basis of the up-to-date educational strategy as well as the bologna process. Stephen Adam phrases this correlation with the following words: "Learning objectives and aims are concerned with teaching and the teacher's intentions whilst learning outcomes are concerned with learning." (Adam, 2004)

Learning *outcomes* describe what a student has learned as a result of a period of study. This construct points into the past and is outstandingly applicable to fulfil the terminological requirements of *assessment*. However, for *planning* purposes we cannot rest on results of processes lying in the past but we have to design *future* processes. Therefore we also have to put the term "learning outcomes" into the projected future and so generate the term "*intended* learning outcomes"[2] – abbreviated ILO. Intended learning outcomes can be defined on different levels and thus are applicable for all matters of certification.

A programme learning outcome is a statement of what the learner is expected to know, understand or be able to do on successful completion of the entire programme. (…)

A module learning outcome is a statement of what the learner is expected to be able to do on successful completion of the module in order to demonstrate their knowledge, understanding, skills and/or competences. (Bowe & Fitzmaurice, 2004, p.2)

For purposes of virtual mobility primarily module learning outcomes will be relevant because the definition of VM includes the integration of short term learning processes abroad into the study program of a sending institution.

What can learning outcomes be used for?

The applicability of learning outcomes is not limited to matters of mobility but expanded to the whole educational business. Adam (2008, p.8) titles chapter 3 of his paper with "The Place of Learning Outcomes in the Bologna Process" and describes 6 functions:

Learning outcomes and qualifications frameworks: (…)Their main role here is to provide explicit and transparent level descriptors and qualifications descriptors. (Adam, 2008, p.10)

Learning outcomes and lifelong learning: (…) In higher education lifelong learning is often confined to the recognition of non-formal and informal learning together with policies to widen participation via non-standard admission and the recognition of prior learning. It is clear that these areas often depend on the usage of learning outcomes as the means to identify and evaluate learning wherever it has taken place. (Adam, 2008, p.11)

Learning outcomes, credits, workload and credit systems: (…) Credits expressed in terms of learning outcomes are a powerful way to recognise and quantify learning achievement from different contexts; they also provide an effective structure for relating qualifications to each other. The addition of the learning outcomes dimension has the

potential to improve dramatically the effectiveness of ECTS as a true pan-European framework. (Adam, 2008, p.11)

Learning outcomes, mobility and recognition: (…) The whole area of academic and professional recognition is likely to be transformed by transparency that the adoption of learning outcomes brings to qualifications and qualifications frameworks. Improvements in recognition with simplified and accurate decision making must in turn facilitate mobility of students, staff and programmes of learning. (Adam, 2008, p.12)

Learning outcomes and curricula reform: (…) Learning outcomes are key tools in the shift towards student-centred learning as they focus attention on explicit and detailed statements of what students learn – the skills, understanding and abilities we seek to develop and then test. (Adam, 2008, p.12)

Learning outcomes and quality assurance: Quality assurance benefits from the adoption of learning outcomes via the resulting improvement in transparency and comparability of standards between and within qualifications. Outcomes-based qualifications should possess greater credibility and utility than traditional qualifications. Quality assurance plays an obvious and important role in creating the European Higher Education Area, increasing mutual trust and confidence between those in different educational systems. (Adam, 2008, p.13)

Central for the purposes of VM are the connections between learning outcomes on the one hand and qualification frameworks, credit systems and mobility & recognition on the other hand. But for strategic reasons also the three remaining topics will be relevant: lifelong learning, curricula reform (or design) and quality assurance. Curriculum design in particular could benefit to a very high degree from adoption of learning outcomes. Logically and psychologically each competence identified as learning outcome of a specific learning process transmutes into an enabling competence for other learning processes with continuative ILOs.

Thus transparency could also be improved for designers, teachers and students of a specific curriculum making clear in detail which learning outcomes / competences have to be already achieved when beginning to study for the next level(s) of competence. This is a big difference to the description of content a student has to have dealt with before being able to deal with continuative content. What a student learns when dealing with specific content can differ to a very high degree in range and quality. Let us return to the example of the multiplication table: it makes a big difference if a student knows how to multiply numbers (the operational laws of the process) or if he/she knows the results of 1x1 to 20x20 by heart.

(Virtual) Mobility depends on mutual trust

The question how the learning outcomes of studying abroad can be recognised is crucial for the promotion of (virtual) mobility. Content, workload (ECTS), and local assessment seem not to be sufficient descriptors to establish a high enough level of trust that would allow for automatic recognition of certificates gained abroad. This is, indeed, to some degree rational: not because some universities produce poor quality regarding the competences of their students (which might also be an argument). The crucial reason is the lack of information value. The statement: students had to deal with a specific contend for a defined number of hours on the one hand, and the local assessment on the other hand do not provide a valid and – from the subjective viewpoint of a sending institution – trustable documentation of students competences. Thus bilateral agreements are needed.

In contrast to this insufficient situation the adoption of learning outcomes would provide sufficient information. By the description of intended learning outcomes according to the state of art ("On successful completion of this module the student will be able to …") assessment criteria and modalities are more or less pre-defined. Learning outcomes are quasi the genetic code of education determining both, the rough design of teaching *and* assessment. If the ILOs cry for problem solving competences you cannot successfully teach them exclusively by lecturing or validly assess them exclusively by elementary multiple choice tests. These learning outcomes demand active learning respectively learning by doing on the one hand and practical forms of assessment on the other hand. To choose the precise design of the learning

process and the assessment is still up to the individual institution and/or teacher. But the framework is fixed by intended learning outcomes.

From this point of view clear, sufficiently detailed, and – as far as possible – standardised descriptions of learning outcomes in combination with adequate assessment procedures can be assumed as one of the main promoters for (virtual) mobility with respect to both, students and institutions. Students would be enabled to make a pinpoint choice of educational offers which meet their needs perfectly and reliably. Additionally the administrative costs of recognition could be reduced to a minimum. Institutions on the other hand could rely on the certified competences achieved abroad and handle them in the same way as internally achieved ones – again with minimal administrative effort.

The solution seems to be rather clear and easy up to this point of consideration. However, its implementation all over Europe – and less would be nearly as good as nothing – could still shape as an enormous problem. It is the ambition of the work in SIG3 "E-learning and evaluation of Learning Outcomes of EQF" of the VIRQUAL project to add a significant contribution to its solution.

The shift to learning outcomes at European universities

The formal structure of study programmes (bachelor / master) as well as the learner centred and the outcomes oriented approach build the core of the Bologna process. The structure has been made obligatory by European – and in consequence – by national law. The adoption of learning outcomes on the contrary is in many countries matter of the decisions of individual universities. This situation led to a "multi-speed Europe regarding higher education reform" (Adam, 2008, p.7).

Current situation in the European HE&CE system – a short overview

A very instructive and compact overview to the overall European situation is given by Stephen Adam and quoted here in extracts:

The most highly developed systems - that use learning outcomes as a basis of their qualifications frameworks, level descriptors, generic qualification descriptors, subject descriptors and at the level of individual modules - exist in Scotland and Eire. It is no coincidence that these are the first two countries to have successfully undertaken the Bologna self-certification process where their national qualifications frameworks were articulated against the overarching framework of the qualifications of the EHEA. (…)

In addition to Scotland and Eire, England, Wales and Northern Ireland have well established systems that have pioneered the higher education use of learning outcomes. Belgium, Croatia, Denmark, Estonia, Hungary, Italy, Moldova, Portugal, Romania, Spain, Sweden and Switzerland are making rapid progress towards a more comprehensive implementation of learning outcomes.

Progress on mainland Europe is often initially being achieved by national legislation. Such top-down measures need to be matched by bottom-up activity. (…) while many countries have begun to use credits for transfer and for accumulation, a much smaller number currently link credits with learning outcomes. The European Credit Transfer and Accumulation System (ECTS) clearly requires the use of learning outcomes, but progress is slow to date.

Overall, official reports indicate positive but slow progress in the national and institutional adoption and implementation of learning outcomes. (…) Such innovations, if to succeed at the first attempt, require careful and slow implementation. (Adam, 2008, p.9)

The specific situation in German speaking countries

For more detailed information we conducted a survey among universities in German speaking countries. By means of an e-mail based survey among vice rectors, vice presidents and other persons

responsible for teaching at European HE institutions we tried to achieve both, to promote the idea of learning outcomes-based planning and to get a picture of the current situation in this countries by asking the following questions:

A   Does your university explicitly use learning outcomes (instead of learning objectives, content, etc.) as starting point for didactical planning of new or revised programmes and modules?

<center>If yes:</center>

B   Are you obliged to do so by (national) law or other (national or other political) regulations?

C   Do you have detailed instructions or guidelines for writing learning outcomes (comparable to attachment: DIT Learning Outcomes Guide)? (If yes, could you make them available for us?)

<center>If no (for A):</center>

D   What do YOU take as starting point for didactical planning? (Learning objectives, content, anything else?)
E   Are you planning to shift to learning outcomes within the next two years?

Sample and Return Rate

During the summer months in 2009 two thirds (N=92) of the vice rectors, prorectors, vice presidents and other persons responsible for teaching (on institutional level) in the German speaking countries Austria (N=21), Germany (N=70) and Switzerland (N=11) were personally contacted by e-mail. Eleven of them (12%) returned an answer. On one hand the return rate is rather poor, probably due to the holiday season. (Nearly as often as an answer we received a notice of absence.) On the other hand the information we could gather from these 11 universities is consistent with our expectations according to literature and first of all sufficient for drawing practical conclusions. Nevertheless the plan was (and still is) to contact all European countries and all HE institutions (universities, private universities, universities of applied sciences / "Fachhochschulen", "Pädagogische Hochschulen). But this was not possible up to now due to capacity constraints.

Results

The answers of eleven members of university managers from Austria, Germany and Switzerland result in the following raw data:

Question A: University explicitly applies learning outcomes: 7 out of 11 (DE: 6 = 100%)
Question B: University is obliged to use learning outcomes: 3 out of 11
Question C: University has guidelines for writing learning outcomes: 3 out of 11
Question D: Alternatives to learning outcomes: content, objectives, qualifications, competences
Question E: Shift to learning outcomes within 2 years: 3 out of 4

Interpretation

Question (A)   Use of learning outcomes: According to Adam (2008) the German speaking countries (except Switzerland) do not belong to the leading nations as respects the application of learning outcomes in HE institutions. This situation seems to change if we look at the results of our survey, particularly concerning Germany. Even if we admit that these results might not be representative (universities which are able to report positively could be higher motivated to reply than those only able to report a lack of development) this feedback seems to be significant: German universities – and to a lower degree also Austrian and Swiss universities – are beginning to deal with the shift to learning outcomes for purposes of curriculum design and didactical planning.

Question (B)   Obligation to use learning outcomes: Even more interesting are the given reasons for this development. Fife out of the six German universities are not (do not feel) forced by law to apply learning outcomes. They react to the requirements of accreditation agencies. Thus their concern to compete on the academic education market seems to be a sufficient motivation for this cultural change that could be able to bring a lot of friction into the system.

Question (C) Guidelines for writing learning outcomes: This seems to be the most important result: the professional foundation of using learning outcomes for curriculum design and other didactical planning purposes is at the moment rather poor. Only three (of 11 answering) universities have or use specific guidelines for this purpose. And this material is in comparison e.g. to the "Guide to Writing Learning Outcomes" used at Dublin Institute of Technology (Bowe & Fitzmaurice, 2004) of moderate quality. Most notably, the terminology is partly too diffuse to discriminate between learning outcomes and traditional (teacher centred) learning objectives.

For sure it is difficult to write such guidelines in an acceptable and useful manner for the individual target groups. However, it will be crucial to have easily usable tools and devices for fulfilling the complex and challenging tasks of curriculum designers and teachers - under the conditions of a paradigm shift.

Question (D) Traditionally used alternatives to learning outcomes: No at all surprising are the (traditionally) applied alternatives to learning outcomes for curriculum design and didactical planning: mainly content and objectives. Those universities using objectives can perhaps be motivated to shift to learning outcomes with much less effort than those still using content.

Question (E) Shift to learning outcomes within 2 years: Three of the four concerned universities (two from Austria, one from Switzerland) answered this question. The Austrian statements are heterogeneous. The University for Arts & Design in Linz claims more time and expresses strong scepticism against the new paradigm. On the other hand the University of Salzburg feels – mistakenly – obliged to apply learning outcomes rather immediately by the university law amendment from 18 August 2009.

Summary of the survey in German speaking countries

We find rather heterogeneous situations no matter if we compare countries or institutions. Even within one university the situation can be completely different in individual sub-divisions like faculties, departments, or institutes (at least at Austrian universities as we know from personal experience). This multi-speed development is not at all a surprise but a standard in the context of cultural change. As a matter of fact the paradigm shift to learning outcomes has to be considered as cultural change.

The adoption of learning outcomes needs a non-traditional way of thinking in educational contexts. For scientists – and university teachers are scientists – content (particularly their individual subject matter) traditionally builds the centre of their world. To move *their* subject matter out of the centre and to replace it by student's learning outcomes might be experienced by university teachers in the same way as mankind suffered the cosmological mortification when Copernicus destroyed the (illusion of the) heliocentric system. Many institutions, managers and employees seem to be overstrained with this challenge. They need help, because successfully writing learning outcomes requires – beyond a new way of thinking – also new competences and a lot of experiences.

From our survey in German speaking countries we learned that many people (and institutions) do not begin to deal with the new paradigm before they are (or feel to be) obliged to do so: if not by law then by accreditation agencies. It seems to be just a minority that starts the respective change process by their own initiative, motivated by the insight and/or promise of future benefits and advantages. According to our experiences this applies primarily to people with a pedagogical or psychological background who had the opportunity to gain theoretical knowledge about the relevant topics. Scientists from other fields rarely had this option and thus often have a more difficult path to a new way of thinking and correspondingly acting. No doubt, individual coincidences can also play a significant role in the necessary change process; e.g. to have read a specific book, to have met a persuasive person, or to be part of an innovative team.

Nevertheless: wherever individual initiatives – be they significant or rudimental – can be firmed up and supported by tools, devices, and consultancy it will be possible to improve speed, quality, and results of the necessary paradigm shift with the utmost probability.

How can the paradigm shift to learning outcomes be supported

According to the analysis of the current situation there emerge two main support strategies for the paradigm shift to learning outcomes:

o Supporting the process (the art) of writing learning outcomes

o Making learning outcomes available for re-use.

In both cases the principle is: "Do not to re-invent the wheel".

Several institutions/universities have developed very useful guidelines on the one hand and/or written a lot of clear and detailed learning outcomes for many modules on the other hand. The basic concept of the VIRQUAL project for support strategies is to collect best practice examples of both, guidelines and learning outcomes (descriptions), to adapt and translate them and (authorisation by the authors provided) to make them available for other interested institutions in appropriate ways. Moreover a lot of dissemination and some research into acceptance, usability, and effects might be necessary.

Strategy 1: Blueprints of guidelines for writing learning outcomes

The Dublin Institute of Technology (DIT) has produced a "Guide to Writing Learning Outcomes" (Bowe & Fitzmaurice, 2004) we used as reference paper for our own survey (see p.4). This guide was written for the specific needs and situation of DIT but some parts of it will also fit to the specific needs and situation of many other institutions. On the other hand there are many examples of guidelines from other universities (e.g. Universität Graz, 2008; TU München, 2008) with different needs and situations. On the basis of the available material it is planned to

o elaborate a blueprint of guidelines for writing learning outcomes in English (optionally in several versions for different framing conditions)

o adopt and translate it for (all) European countries and

o disseminate it in adequate ways among the target groups (VIRQUAL website, via e-mail, personal contact, etc.)

Strategy 2: Collection of best practice examples of learning outcomes

Guidelines (see above) aim at improving the competence and the *process* of writing learning outcomes as important tools for designing curricula and – ultimately – the European Higher Education Area. In contrast a best practice collection of learning outcomes will improve the *products* on an international level and help to develop *standardised* learning outcomes for units, modules and programmes in a long term perspective.

The competences of a medical doctor will be the same in Paris, Marseille, Espoo, and Athens; at least to a very high degree. Basic skills in mathematics will be completely the same in all the cities named above as well as in different programmes like physics, psychology and economy. What usually makes the difference are the way these competences are described and the learning situations planned for gaining them.

Institutions and teachers should be enabled to concentrate on these tasks – and not be forced to spend time and effort on the individual formulation of the same identical learning outcomes again and again. Who comprehends that learning outcomes are the genetic code of education will stick to the creation of the optimal environmental influences to realise the inherent potentials – and will unhesitating leave the job of writing ILOs to others if he/she can get them in high quality and free of charge from other sources.

Therefore it is considered to implement a data base for – professionally written – learning outcomes on a European basis where institutions can upload their products (in original language *and* English). Quality control will in the beginning be performed and/or organised by the VIRQUAL project and could later be executed by an advisory board consisting of representatives of participating universities.

Summary and Outlook

The paradigm shift to learning outcomes is a multi-speed development within European countries and institutions. Some countries on the one hand and some universities on the other hand are forerunners and have already implemented adequate processes of applying learning outcomes for designing curricula of study programs and modules. Others have just begun this process while the third group is still waiting

for the starting shot. Particularly these last group of HE&CE institutions are the target group for a learning outcomes-oriented support strategy to be developed and executed by the VIRQUAL project within the next two years.

Its central tools will be blueprints of guidelines for writing learning outcomes on the one hand and a collection of best practice examples of learning outcomes (ILO repository) on module level on the other hand. Both will be based on exploitation and refining / adopting of available products which will be made easily accessible for interested institutions and individuals mainly via VIRQUAL website (respectively other adequate tools after the end of the project period), personal contact and further means.

The ILO repository will be easily manageable in the beginning of its development when the challenge is to optimise the formulations, to find out which cultural adaptations have to be done for different countries or institutions and to translate the elaborated learning outcomes into other languages (at least English). But if full coverage of all study programs in the European higher education area is required – and in a far future potentially achieved – we will have to handle estimated between 10.000 and 20.000 learning outcomes on module level. On course level the number would be four to six time higher. Such quantities are not manageable without a strong topical structure of high usability and ultimately with a coding system ready for machinable data processing.

The aim of this paper is primarily to discuss the plausibility and the expected acceptance of this initiative. Thus I want to ask you four short and clear questions:

1. Would you like to contribute to the guideline blueprints, and would your institution give you the permission to do so?
2. Would you use available guideline blueprints and would your institution accept that?
3. Would you like to contribute to the ILO repository and would your institution give you the permission to do so?
4. Would you borrow available ILOs and would your institution accept that?

Endnotes

(1) The use of information and communication technologies (ICT) to obtain the same benefits as one would have with physical mobility but without the need to travel.
(2) In my opinion "intended learning outcomes" are terminologically fully identical with the "operationalised learning objectives" of former decades. But I fully agree with Adam and other authors, e.g. Gronlund (2000, p.5) to prefer the term "learning outcomes" for both, assessment *and* planning of learning processes because of its impact in terms of psychology of perception.

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