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Exploring Discrepancies in Expected and Perceived Acquisition of Competences for Sustainable Development in Higher Education

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Abstract

Higher education institutions need to equip student learners with the competences required to tackle unknown future challenges. This demands of the educational system that the students are provided opportunities to acquire competences for sustainable development during their studies. The purpose of this paper is to explore the perceived acquisition of competencies for sustainable development from the perspective of the student learners as well as what is expected based on program documents. To compare the two types of input it is important to consider differences in expected outcome and perceived outcome of the acquisition of competences. The conceptual model forming the foundation for this study is the result of a literature review and encompasses eight interrelated competences. Data collected for the program documents include written documents in terms of program syllabus, course syllabi and course instructions. Input from students, who were on their last semester before graduating from a Bachelor program, was collected in 2024 using a questionnaire. A total of 23 written documents and 35 responses to the questionnaire constitutes the data set. The initial findings indicate that there is a discrepancy between what the documents stipulate in terms of opportunities to acquire the competences and what the student learners perceive that they have gained in terms of competences.

Keywords: *acquisition of competences for sustainable development, program documentation, student learners*

1. Introduction

We live in a time of uncertainty. And while the uncertainties vary in severity and type [1], they often carry negative connotations. Uncertainty can however also be the necessary positive spark that drives development and transition towards something promising [2], i.e. an improved future state. Consequently, while uncertainty certainly cannot, and perhaps should not, be avoided it appears valuable to prepare for the unexpected in order to enable a positive outcome. We argue that it is important to develop uncertainty coping skills among younger generations because they lack experience that otherwise has proven helpful in managing unfamiliar settings [1] while “facing a future full of uncertainties due to conflicts, economic variability, climate change and rising inequalities” [3]. In a higher education context, preparing for the uncertain translates into a discussion of equipping the student learners with a set of resilient competences needed to tackle unknown future challenges regardless of field of study or future profession. In fact, to prepare students for dealing with changes that will occur in their forthcoming professional lives is also found to be a legally binding obligation of higher institutions, see e.g. [4]. Research focused on how well higher education institutions in preparing and equipping student learners with resilient competences to tackle uncertainties in the future appears scarce. Overall contemporary empirical research in the area of competences for sustainable development in higher education shows signs of scatteredness as a variety of different approaches are taken. These approaches range from focusing on the content of course syllabus [5], hearing it from the teachers’ perspective [6], and to learn what industry experts believe are the most important competences students need to gain during their studies [7]. This study focuses on contributing with needed insight by contrasting expected development of competences for sustainable development with what competences the student learners perceive that they have gained while studying at a university, thus combining two perspectives. In line with the previous discussion the purpose of this study is to explore the perceived acquisition of competencies for sustainable development from the perspective of the student learners as well as what is expected based on program documents. The remainder of this paper contains a presentation of the conceptual framework underpinning the empirical study, a description of the two datasets, the initial results and concluding discussion.

2. Competences for Sustainable Development

In brief, competences are abilities learned as well as used through action [8]. In other words, competences can be defined as “an interplay of knowledge, capacities and skills, motives and affective disposition” [9, pp. 129] manifested through actions [8]. The resilient competence framework for higher education (see Figure 1) forming a basis for this study consists of eight distinct but interrelated competences [10]. This framework was developed to capture as much of the variance of existing models focused on competences in higher education as possible while avoiding overlaps between the components included to allow for a clear operationalization. Below follows a very brief presentation of each of the eight competences for sustainable development in higher education.

2.1. Systems Competence

Systems competence, or systems thinking [9], entails managing complexity of systems [11], [12], [9], [13], [14], [7], [15]; crossing interdisciplinary boundaries [11], [16], [9], [13], [17]; understanding interconnections between parts within systems [11], [12], [7], [17] e.g. dependability of one part of a system on another part of the system [14]; and to view systems as dynamic [14], [17].

2.2. Anticipatory Competence

Anticipatory competence means having the ability to imagine the future [7] and hence identify opportunities and risks [11], [12], [13]; challenges [17]; and consequences of decisions [14], [7], [17].

2.3. Implementation Competence

Implementation competence is about taking action [13], [18], [15]. This means that implementation competence is about doing something [11], [7], not only knowing how to do it.

2.4. Values and Ethical Competence

The competence of values and ethics emphasize recognizing one’s own values in comparison to values held by others [16], [7], and to appreciate differences in perspectives [13], and to negotiate values [7]. Key descriptors of this competence are compassion [11], [16], [13]; empathy [11], [16], [9], [13]; and promotion of justice [11], [12], [13].

2.5. Critical Thinking Competence

Critical thinking is about avoiding path-dependency [18] by challenging what is taken for granted. This entails independence in evaluation of sources and existing knowledge [17].

2.6. Interpersonal Competence

Key aspects describing interpersonal competence are cooperation [9] and collaboration [12], [13], [18], [14], [17].

2.7. Intrapersonal Competence

The competence referred to as intrapersonal encompasses the six components of self-care [14]; self-awareness [14], [15]; self-control [18], [14]; self-motivation [11]; open-mindedness [9]; and resilience [15], [17].

2.8. Problem-Solving Competence

Problem-solving competence is about solving wicked and complex problems [15], by identifying and formulating problems [4]; planning, implementing, and evaluating problems-solving processes [18].

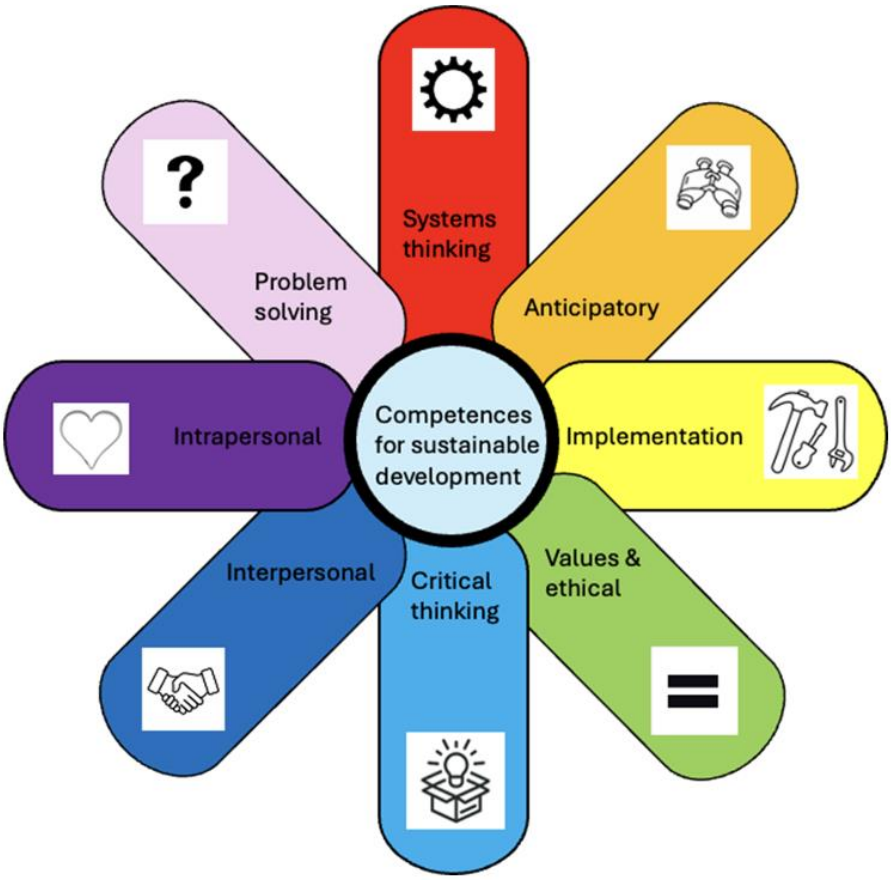

Fig. 1. Visualization of the resilient competence framework for higher education (Devine and Sandell, forthcoming).

3. Method

To allow for exploring the acquisition of competences from two perspectives, i.e. perceived by student learners and expected based on education documents, empirical material was gathered from two different sets of data. An operationalization of the resilient competence framework for higher education directed the collection of both datasets to secure relevancy and ensure comparison. Both data sets originate from the context of an international bachelor program (i.e. both national and international application rounds) within business administration offered in English at a Swedish university. Except for one semester when the students are expected to study abroad there are no elective courses in the program, and no co-reading with other programs. Since this gives more control over the process of skills development, this program offered a suitable choice.

3.1. Student Survey Dataset

A survey questionnaire containing 60 statements measured on a 5-point Likert scale was used to capture the student learners' perception of what competences they have acquired during the three years of the bachelor program. The decision was made to focus on third-year students since they have almost finished the program and should therefore be able to give an informed account on what competences they have been able to acquire while enrolled in the program. The questionnaire was handed out physically and in-person to all third-year students present during the presentation of their bachelor theses, which is the final step of the program. The physical hand-out was preferred in order to get as high response rate as possible. All (38) students present at the seminar were asked to participate in the survey. A response rate of 92 percent could be secured. All respondents remained anonymous as no data was collected in terms of name, gender, age, or country of origin. A basic analysis was completed involving computation of variables (i.e. summated scales) which are summed up in Table 1.

3.2. Program Documents Dataset

The data representing the perspective of the educational system originates from a total of 23 written program-specific documents retrieved from the university's home page and the learning platform for the course of the program. These documents include the program syllabus, course syllabi and written course instructions. All course syllabi and instructions were considered expect for the courses offered during the exchange semester of the program, which means that over 83 percent, or 150 ECTS, of the total program courses were accounted for. Guided by the competence framework both authors independently completed a manual content analysis during the fall of 2023, counting how many times a competence was mentioned. The two separate content analyses were thereafter discussed by the authors and combined into an agreed mapping of competences within the program documents. The content analysis revealed to what extent the content of the program documents explicitly mentioned what the student learners should acquire in terms of competences. The overall result is available in Table 2. Using Critical thinking as one example, the following quotes demonstrate how this particular competence was identified in the different types of documents:

- Program syllabi: "For a Degree of Bachelor the student shall (…) demonstrate the ability to search for, gather, evaluate and critically interpret the relevant information for a formulated problem and also to critically discuss phenomena, questions and situations…"
- Course syllabi (semester 5): "After completing this module the student should be able to (..) search for, gather, evaluate and critically interpret relevant literature…"
- Instructions (semester 5, Literature review module): "The literature review will be a major part of the group project. Do not only present the concepts, but present them critically in relation to other concepts and sources. The literature review will reflect your information gathering skills, your ability to find and identify relevant information, and your skills when it comes to summarizing key ideas showing critical awareness, not just writing what it says in the articles, but what it means in relation to your project."

4. Results

The data gathered from the students disclose information about their perception of competences gained right before graduating from the program. Overall, the student learners indicate that they had the possibility to acquire the competences during the program. The overall mean score for all eight competences is 4,04 out of 5, where 5 indicates that the students fully agree that they have acquired the competence. The mean values were quite similar for all competences. The following three competences received the highest mean score: Critical thinking (4,22 mean); Intrapersonal (4,09 mean), and Implementation (4,08 mean). The three competences that received the lowest scores are Anticipatory competences (3,93 mean), Systems (3,98 mean) and Problem-solving (3,99 mean) (see Table 1).

Competences	Mean
Systems Competence	3,98
Anticipatory Competence	3,93
Implementation Competence	4,08
Values & Ethical Competence	4,05
Critical thinking Competence	4,22
Interpersonal & Collaboration	4,00
Intrapersonal Competence	4,09
Problem-solving Competence	3,99

Table 1. Mean value of students' perception of competences gained while enrolled in a bachelor program. A questionnaire containing measurement on 5-point Likert scale was utilized for data collection. (N=35)

The content analysis showed the number of times the program documents mentioned competences, i.e. expectations of what competences the students should be able to acquire within the bachelor program. Being mentioned a large number of times could be a signal of emphasis on competence development. Two interesting findings relate to this dataset. First, depending on the type of document, i.e. the program syllabi, course syllabus and instructions, there are variations in the mentioning of the eight competences. Overall, the course instructions bring up competences most frequently (in total 113 times), and the program syllabi the least often (23 times). Secondly, in total across all three types of documents, the four competences most frequently mentioned are in decreasing order: Critical thinking competence, interpersonal competence, problem-solving competence, and anticipatory competence. The by far least mentioned competence within the documents is implementation competence, followed by intrapersonal competence (see Table 2).

Competence	Program syllabus	Course syllabi	Instructions	Total
Systems Competence	0	9	7	16
Anticipatory Competence	1	5	23	29
Implementation Competence	1	0	0	1
Values & Ethical Competence	5	4	4	13
Critical thinking Competence	5	11	21	37
Interpersonal & Collaboration	3	2	31	36
Intrapersonal Competence	3	2	3	8
Problem-solving Competence	3	4	24	31

Table 2. Number of times competences were encountered in three types of documents (i.e. program syllabus, course syllabi, and course instructions).

5. Discussion

Before discussing the results, one needs to highlight that the results presented in this paper are to be understood as offering indications which are not so generalizable. For example, direct comparison of the two datasets is not without issues given the differences in measurement types. However, there are differences in terms of tendencies between how the students perceived acquisition of competences and the expectations stated in the documents that seem interesting to discuss further.

The biggest differences between the data sources relate to implementation and intrapersonal competences. These two competences are the least emphasized in the documents overall, and in the most “active” course document that the students work most directly with, i.e. the instructions, this is particularly the case. At the same time, implementation and intrapersonal competence are the second and third most acquired competences according to the data from the students. A potential explanation for the discrepancy between expected and perceived competences gained may reside in the outdated dominant logic of higher education to be input centered, i.e. adhering to culture of teaching [19], rather than having a focus on what should be learned [11]. This could suggest that the documents have not been updated but convey input (e.g. content, structure, and methodological approach) rather than reflect what is learned as part of the course work.

There are also signals that there may be some similarities between the two perspectives represented by the datasets. The two datasets both reveal that the most expected and most acquired competence is critical thinking. Given the emphasis on critical thinking in higher education this comes as no direct surprise.

The student learners’ perception of gained competences within the scope of the program show an overwhelming agreement that they have acquired such competences. This result was much stronger than expected, not least given the seemingly little emphasis on gaining competences in the program documents. One interpretation could be that there are invisible embedded competences within the program courses that cannot be deciphered by looking at the written documents. To understand the strong indication from the students that they have gained the resilient competences,

more insight from the students and from the teachers seem to be needed. Turning the focus to the program documents, it is clear that the three different types of documents do not send the same signals in terms of expected competences. One example is the anticipatory competences, where the program syllabus barely mentions it, course syllabi mention the competence up to five times, while the course instructions mention anticipatory competences as much as 23 times. There are likely several reasons for this. One reason could be that changes to program syllabi and course syllabi take a long time to complete as these documents need to pass through rigorous decision and administrative systems before being valid. When it comes to course instructions on the other hand, each teacher involved in moderating a course has a high degree of freedom to update and change the instruction for a given year.

6. Contribution and Suggestions for Further Research

This study set out to explore the perceived acquisition of competencies for sustainable development from the perspective of the student learners as well as what is expected based on program documents.

The value of this study for researchers, teachers, and program directors therefore resides in an encouragement to initiate processes of enquiring about the alignment of expected and perceived competences at program level. In line with the opening argument, i.e. that the uncertain future cannot and should not be avoided, it is important to equip students in higher education with a set of resilient competences for sustainable development. While student learners perceive that they gained competences partly despite what the program documents state, stating competences also in program documents of different kinds would logically result in even stronger competence development among the student learners. Thus, to further enable the student learners to gain the needed competences within the course work it should be critical to also ensure that this is stated in the documents prescribing the content and delivery of program and courses. A critical aspect of the enquiring process of alignment between expected and perceived is the openness of collegial conversations and willingness of each stakeholder in the educational system to ease the transformation from input bound to output centered. And with the risk of pushing the discussion of contribution too far, it may be worthwhile to enquire to what extent higher education teachers feel that they themselves have the set of competences needed for an uncertain future.

This study included weaknesses which affect the robustness of the findings. Therefore, to draw generalizable conclusions further research is needed. One weakness of this study is that the responding student learners were asked to indicate which competences they developed during the time they were enrolled in the bachelor program. The data collection instrument used did not however allow for demarcating between competences gained within the scope of the program, or outside the scope of the studies in a parallel competence development process during the given time. This means that while the result offers insight into the students' perception of competences gained while being a student, to what extent other parts of the student life also have contributed to development of competences cannot be concluded. For example, studying at university often means moving away from home for the first time and taking responsibility of a household while balancing studies and part time jobs. It is likely to be an exciting albeit a challenging period filled with turmoil and stress, where the person learns about him/herself and the consequences of one's own decisions. It is tempting to interpret this to be in terms of why intrapersonal competence is something the students perceive they have gained during their studies, while the documents from the program show little signs of this. This begs further research.

Another weakness relates to the decision to focus only on the third-year students about to graduate. More nuanced insight would have been gained if data from the students would also have been collected multiple times during the program, e.g. at the beginning of the program and at the end of every semester. Such a process would have allowed for understanding in which phase of development and part of the program the students acquired the competences. It would also be relevant to supplement the survey questionnaire with focus groups for deeper insight into the student's perception. With insight of where in the student journey certain competences seem to be acquired, higher education systems can address competence development systematically, i.e. through progression, as subject specific and methodological knowledge gain.

As stipulated by the definition of competences, it is one thing to acquire competences, while the value of having a competence is very limited unless the graduates put it to use [8]. Collecting data from student learners allows for asking if they intend to use the competences in the future, but it does

not ensure they in fact put the competence to use. Therefore, it would be beneficial to reach out to alumni about three to five years after graduation, to hear if they are utilizing the competences gained.

While a more nuanced insight comes from the students, the educational system would also benefit from other sources, apart from the program documents, obtaining a richer insight. A seemingly fruitful approach can be supplementing the program documents with interviews with the teachers designing and moderating the courses. This would give insight into the delivery and more precise content of each course within the program. Involving the teachers in the project seems crucial as it would likely lead to more understanding and enthusiasm for making improvements to the courses of the program to ensure that the graduates are equipped with the competences needed for an uncertain future.

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