University Industry Interaction and Knowledge Exchange

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Abstract
This paper describes a case study of two training departments of universities of applied sciences in the Netherlands. This case study focuses on policy and policy results of University Industry Interaction and on knowledge exchange in particular. The research question is, “How successful is the University Industry Interaction in facilitating knowledge exchange?” This case study is based on analyses of documents and minutes used and produced by these two departments. Central in the theoretical framework is the degree of coupling (Weick, 1976) that exists between the various levels of educational institutions and the industry. Theory surrounding knowledge exchange is used to analyse the contribution of the interaction from the departments’ points of view.

Keywords: university industry interaction; field interactions; learning organizations.

INTRODUCTION
Education, especially vocational and higher professional education, is intertwined with interaction with professionals. Training and experience in a profession are crucial. Training institutions in UAS have therefore inherited legal frameworks (WHW 1992) in addition to UAS programs with accreditation organizations, implemented according to the WHW and developed according to the NVAO standards (NVAO 2014). The explanation of NVAO Standard 1 specifies: “The intended learning outcomes (…) tie in with the international perspective of the requirements currently set by the professional field and the discipline with regard to the contents of the program.” These legal frameworks are used in their educational institutions and the programs for further profiling. These policy choices are enshrined in UAS guidelines, training cadres, and instructions to teachers.

External validation focuses on two aspects: confirmation that training is “of value” for the professional, and external validation as the way that a program may assess the extent to which its knowledge of the profession is up-to-date. The latter is, in fact, the learning ability of an education. To see if one’s knowledge is up-to-date, one is confronted with the knowledge that one likely does not have yet. Learning ability is, in this context, the ability to exchange knowledge. The extent to which this exchange results in learning is a question that, at the moment, falls outside the scope of this study. This research takes the interaction with the professional field as a starting point and is studying whether there is any validation. The research question is, “How does UII contribute to the validation of the UAS programs and prove the actuality of the programs?”.

EXTERNAL VALIDATION
Universities of applied sciences have seven different standard UII activities. The activities are standard in the sense that, to fulfil the study program, they are obliged to perform these activities. First in the study program is an internship in the third year. The second mechanism,
whereby the student is used to measure the expectations of the professional field, is the final project or bachelor thesis. This is sometimes called the aptitude test. The learning situation provides the opportunity to carry out this mission under guidance or training. The third mechanism in which the student is used as a yardstick is also called a minor, whereby a business or other organization inserts questions being addressed by the student (or team of students). These three mechanisms mainly look at the student as a measurement of the success of the study program. The UAS measures the success of the student in terms of whether sufficient professional knowledge and skills are given. At the same time, a training situation is used to evaluate those involved in the field to their satisfaction.

UAS programs interact much more with the professional field. A familiar example is the advisory council or consultancy board. These are councils are created by the UAS and filled with relations. For the UAS, the purpose of such a council is to advise on the curriculum. It can also provide advice regarding and confirmation of the choices made by the UAS and evaluate the study program. At same time, the council members report the newest developments in the profession. This “partners in education” arrangement benefits both, and it includes evaluations of and contributions to education, knowledge and recruitment. Further, research programs within industries create university-industry interactions. Finally, there is the interaction with sister courses and the external participation in examination councils. These are forms of indirect validation, which occur by looking how the same study at another UAS has developed a curriculum and judges its students.

<table>
<thead>
<tr>
<th>Internship</th>
<th>Industry interaction as part of the curriculum</th>
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<tr>
<td>Final thesis</td>
<td>Industry interaction at the end of the program (graduation thesis)</td>
</tr>
<tr>
<td>Project / minors</td>
<td>Industry interaction; working with real profession issues (student / group of students carry out brief)</td>
</tr>
<tr>
<td>Advisory board</td>
<td>Advising UAS on the curriculum and the developments in the profession (meetings once or twice a year)</td>
</tr>
<tr>
<td>Partners in Education</td>
<td>Industry contributes to education through guest lectures cases, histories, information, etc.</td>
</tr>
<tr>
<td>Research</td>
<td>Industry provides training and pays for research. Students are sometimes involved.</td>
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<tr>
<td>Sister programs</td>
<td>UAS tunes curriculum and judges with sister programs (programs from other UAS that educate for the same profession)</td>
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THEORETICAL FRAMEWORK

This study covers the operational leeway with regard to the UAS and its programs that interact with the industry. The interaction is a survival requirement in order to validate and thereby demonstrate that it meets the accreditation requirements.

The majority of studies on the interaction between higher education and the field of work (e.g., Davey, 2015) explores the concrete results and consequences of their relationship instead of focusing on the interactions between the mechanism of interaction on both strategic and operational levels. The nature of the forms of cooperation at both levels (strategic and operational) and the mechanisms involved presupposes a kind of link (Weick, 1976) in this field. The link between the field and the undergraduate programs at two levels, as distinguished from accreditation reports, is the central theme of this study.

\[1\] A minor is an educational component in addition to the curriculum chosen by the student but within the Dutch university system. Students may participate in a minor at another university.
We focus on the UAS, where the link with the field, an essential part of the institutional fabric, remains unexplored. Traditionally, UAS offers vocational education (Huisman, 2008; Jongbloed, 2010), which focuses on the local and regional labour markets. Their interactions with companies have intensified in recent years with the introduction of the official role of the study. In particular, there is evidence of educational innovation, highlighting problem-based learning, short-term, project-oriented research, and the growing social and economic landscape bulwark (Hasanefendic, Heitor, and Horta, 2015). In this light, it is worthwhile to examine how the interaction with companies is structured and what the implications for the curriculum development program are.

To address these issues, we analysed policy documents and minutes of policy activities of two UAS institutes, both of which have frequent contact with industry at both strategic and operational levels of the organization (Weick, 1976; Bromley and Powell, 2012). The strategic level is related to the manager or the policy aspect of cooperation and refers to the extent to which the professional field participates in determining the learning outcomes of programs, or the extent to which it is consulted regarding curriculum design and delivery (Davey et al. 2011). We define the operational level as well as activities related to the art (e.g., companies) embedded in the curriculum program in education and research practice.

To define a set of conclusions on the nature of the interactions reported at the strategic and operational levels, we introduce the theoretical perspective of “loose” coupling of Weick (1976) and, more recently, Orton and Weick (1990). These authors refer to autonomous and independent units embedded in a larger system, such as “loosely coupled” systems. In loosely-coupled systems, the actions of one unit have little or no effect on the other unit, or even the entire system. The basic underlying logic is that, unlike tight coupling, which supposes highly integrated and responsive systems, and decoupling, which refers to the opposite alternative, “weak link” indicates that the system is less robust and that units are free to adjust without transforming the entire system (Orton and Weick, 1990). This theoretical concept gives us space to understand the extent to which the field is involved in shaping learning outcomes on a strategic level, as well as how the interaction is represented at the operational level.

Previous studies have documented the existence of linked systems, both within organizations and external to organizations, creating interdependent partnerships in which abnormalities are present (Soh and Sia, 2004; Bromley and Powell, 2012). Such literature always emphasizes the process of mutual adjustment in the direction of some form of the final alignment (see Berente, 2009; Fusarelli, 2002). Higher education curricular program groups are considered with caution by the field, despite the increased interest in their relationship (Teichler, 2007; Leisyte et al., 2013).

**METHODOLOGY**

This study has systematically analyzed policy documents, reports, policies, and implementation in relation to the interaction with the profession. This articulates their educational policy and implementation of that policy. Additionally, policy documents such as legal regulations, national agreements, and the like have been collected and referenced. Finally, these policy documents are completed by the analysis of reports and evaluations concerning this policy and its interaction with the professional field.

These documents are analyzed using the following questions:
1. Is policy mentioned in terms of the interaction with the industry?
2. Are measurable criteria mentioned?
3. Is a systematic evaluation included?
4. Is implementation of knowledge exchange included?
5. If knowledge exchange is a goal, is it mutual?
6. Is the knowledge exchange evaluated and reported?

After the first classification of the relevant categories in the text, the frequency of the documents and reports at both the operational and strategic level was checked, that is to say, we measured the degree of coupling. The degree of coupling can have different sizes, and the looseness can be absorbed by words like “often,” “intense,” “likely,” and “negligible” (Weick, 1980, p. 5). We
described the mechanisms of interaction and the frequency of reporting on the interaction both at strategic and operational levels, and the degree of coupling was indicated.

CONCLUSIONS
This study is a document analysis of two UAS, and it focuses on interaction with industry. The studied documents show how a hierarchical chain is visible from legal frameworks to university strategy, to institute policies and to the actual implementation. The seven mechanisms generate much interaction. Knowledge is part of almost all of these mechanisms, but this knowledge sharing is more implicit than explicit.

As in many situations, there is a possibility of a chain, but not a closed quality cycle: there is policy, and that policy leads to specific actions, but, at the moment, the actions can be improved or the policy will be adjusted in the event of a shortcoming. It is not verified until barely or the updating results show the improvement that was intended.

The documents show precisely that feedback on actions is absent. For example, an evaluation reveals that companies indicate that there should be more attention given to training on cost methods. The training concerns get to work but are not reported to the group; it has provided advice and therefore has not checked whether the curriculum change brought the intended results.

We are also aware of some limitations. First, this study is only concerned with undergraduate programs of two UAS. Future research should compare the evaluation of the programs at universities to understand that the involvement of the field in undergraduate education is more explicit and more embedded in the knowledge and in the results of the curriculum. These findings may contribute to understanding the differences between the two structures of higher education, especially when boundaries between the two are blurred (Huisman and Kaiser, 2001).

REFERENCES


