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Mutual Enhancement or One-Way Street: The Intended Synergy between Research and Education of Dutch Universities of Applied Sciences

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Abstract
The integration of research activities in universities of applied sciences (UASs) has led to the transformation of these universities into organisations with two primary processes: research and education. Although many believe in the benefits of combining research and education in one organisation, which is referred to as synergy in this study, research–education synergies have rarely been empirically investigated, particularly in the UAS context. Thus, this research investigates the intended synergy between the research and education of UASs by conducting a document-analysis of their university-wide strategic policy. The findings show that UASs aim for synergies among people, UAS organisations and outside UAS organisations, with a focus on education-oriented synergies. This study provides an initial understanding of the strategic aims of UASs considering research–education synergy. The findings provide direction and a framework for future research and form a base for making explicit strategic choices for research–education connections in universities.

Keywords: higher education, strategy, document analysis, synergy, research–teaching nexus

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Conflict of interest

None of the authors have a conflict of interest to disclose.

Introduction

This article aims to provide insight into the synergy that is strategically intended by universities of applied sciences (UASs) as an effect of combining research and education. The combination of research and education stems from the 19th-century Humboldtian belief that learning is conducted through research (Elton, 2005; Robertson, 2007) and is considered foundational for research-intensive universities (Jenkins et al., 2007; Pekkola et al., 2020). However, the combination of research and education has only recently been introduced in UASs. Historically, UASs were teaching-only higher education institutions that shifted at the end of the 20th century when the Bologna and Lisbon Agreements resulted in different expectations for UASs (De Boer, 2017). To stimulate innovations in professional practice and to create a value-added knowledge economy, European society was said to need more highly educated professionals to innovate in professional practice (Griffioen et al., 2021) and handle an increasingly complex body of knowledge (Brew, 2010). This resulted in the expectation that UASs would play a role in knowledge circulation and would incorporate research activities (Brew, 2010; Kyvik & Skodvin, 2003). Therefore, some European countries and governments designated the task of conducting research to UASs by law and provided substantial funding to support this (De Weert & Beerkens-Soo, 2009).

In supporting research–education combinations in UASs, governments and (inter)national institutions generally follow the assumption that research–education connections in UASs could lead to positive effects, also called 'synergy', such as the creation of a 'knowledge economy' (De Boer, 2017) or a better accommodation of UASs' graduates to the demands of professional practice (Gageldonk, 2017). Generally, synergy can be defined as the effect that occurs when the overall return of two combined parts is greater than the sum of two individual parts existing alongside each other (cf. Ansoff, 1965). In regard with synergy between research and education, Talaba (2007) states it could also indicate a mutual enhancement in the quality and effectiveness of either process. In turn, Trowler and Wareham (2008, p. 24) illustrated that the assumption that 'teaching and research can and should be synergistic' lacks empirical evidence and is largely normative, which is especially the case for UASs. Furthermore, combining research and education in one organisational entity could be a complex endeavour. For example, research activities bring about different structures and systems (Brew, 2006), distinctive work patterns (Robertson & Bond, 2005), and are said to require different competencies of employees to practice both tasks at a high professional level (Burke-Smalley et al., 2017; Griffiths, 2004). Other investigations have shown that research activities are perceived as more prestigious (Zubrick et al., 2001) and play a more important role in assessing performance and obtaining funding than teaching activities (Huang, 2018). Therefore, these differences between research and education—as mainly shown in the context of research-intensive universities—could make connecting research and education a complex and time-consuming effort and could thus complicate achieving synergy.

However, although the notion of synergy between research and education has been considered by stakeholders at an (inter)national policy level and has been investigated at the level of individual academics and students, it remains unclear how this notion of synergy between research and education is part of a strategic approach within individual higher education

institutions, such as UASs (Jenkins & Healey, 2005). Strategy includes the long-term goals and objectives of an organisation (Chandler, 1962) and often guides the organisation's decision making, allocation of resources, and employee accountability (Özdem, 2011; Teece, 2010). As research and education involve different structures, systems, and work patterns (Brew, 2006; Robertson & Bond, 2005), research and education might not unite naturally. It is therefore posited that a strategic approach is needed to enable and enhance connections between research and education. Currently, it is however unclear whether UASs apply such an approach, and which concrete research–education synergies they are aiming for.

This research fills this knowledge gap by considering UASs' organisation-wide strategic aims with regard to research–education synergy. In the following paragraphs, first, the different ways research and education have been shown to be combined in universities are presented. Second, previous works on synergy between research and education are described. Third, the role of strategy in achieving research–education synergy is discussed. Lastly, the context in which this investigation is conducted, which is the UAS sector in the Netherlands, is described.

Combining research and education

Previous research has shown that research and education can be combined in several ways and at multiple levels throughout a university organisation (Jenkins & Healey, 2005; Trowler & Wareham, 2008). Many studies have focused on the combination of research and education in students (e.g. Healey, 2005) or in the work of academics (e.g. Åkerlind, 2008). For example, empirical research has shown how students can be introduced to research in their discipline, participate in research (led by academics) and be educated in developing research skills (Jenkins et al., 2003). For academics, the struggle to combine both teaching and research tasks has been central in many studies (e.g. Smith & Boyd, 2012). Scholars have also shown how lecturers' practices can be informed by research (Trowler & Wareham, 2008) and how these practices can be shaped by their research perception (Visser-Wijnveen, 2013). Studies focusing on other levels of the organisation, for example, in curriculum design and organisational development, are usually conceptual and less empirical in nature. Considering the curriculum, examples are given of how research integration can result in a changed curriculum setup (Brew & Boud, 1995) or in new courses about research methods (Wuetherick & Turner, 2006). Departments have been shown to develop their own understanding of the role of research in professional practice (Trowler & Wareham, 2008) or to relate the focus of educational programmes to the department's research focus (Neumann, 1992). On an organisational level, a fitting reward system (Jenkins & Healey, 2005), a research culture, and appropriate policies and structures (Trowler & Wareham, 2008) have been suggested as ways of integrating research and education.

Synergy between research and education in UASs

Although a considerable amount of research has been conducted on the ways in which research and education can be connected (e.g. Jenkins et al., 2007; Trowler & Wareham, 2008), studies on how these can lead to synergy have been mainly implicit. Several authors have argued that much

of the literature has taken a normative position in favour of synergistic effects through research–education connections, lacking empirical evidence and neglecting the possible negative effects of combining research and education (Coate et al., 2001; Trowler & Wareham, 2008). Conceptually, authors have suggested a broad spectrum of possible synergies, such as synergies in universities' research and education (Talaba, 2007) at the university level in general (Jenkins et al., 2007) and in professional practice (Heggen et al., 2010). Empirical evidence of synergies between research and education has been provided, but mostly in case studies focussing on single research–education connections. For example, several researchers have shown that students' participation in research could lead to the enhancement of students' learning, research abilities and employability (Gros et al., 2020; Hajdarpasic et al., 2015; Turner et al., 2008; Zubrick et al., 2001). The research knowledge and abilities of academics have also been found to enhance their teaching effectiveness. Specifically in the context of UASs, lecturers who are interested in research were found to be more likely to engage students in research groups, integrate (their) research into their teaching, and interact with students in an informal environment (Durning & Jenkins, 2005).

Not disregarding the importance of these or other examples of synergies between research and education, these studies do not show whether such synergies were part of a strategic approach to enhance research–education synergy, as considered in this study.

The role of strategy in achieving research–education synergy

A strategic approach, consisting of organisation-wide long-term goals towards enhancing research–education synergy (Chandler, 1962), might however be important to facilitate and stimulate research–education synergy. Firstly, while previously higher education organisations were considered decentralised organisations (e.g. Mintzberg, 1979), recent scholars have found that strategising and decision-making in higher education has become more centralised due to developments such as new public management, national quality assessment and performance-based funding (De Boer et al., 2007; Kallio et al., 2020). This centralisation could request for a strategic approach to connect research and education. Moreover, the strategy of an organisation is considered fundamental to decision-making (Teece, 2010), and resource and budget allocation (Özdem, 2011). A strategy could also provide clarity about what is expected and who is accountable (Özdem, 2011). A statement within the UAS's strategy about which research–education connections should be established and why, could guide managers and policy makers within UASs to make decisions that enhance research–education connections. The significance of such a statement is advocated by scholars who found that 'the day-to-day management of academic departments is often based on systems that treat teaching and research as distinct activities' (Coate et al., 2001, p. 172). Furthermore, stating the essence of research–education connections within the UAS's strategy has the potential to promote these connections (Brew, 2006) and create 'a sense of shared purpose' amongst employees (Jenkins et al., 2003, p.75; Mintzberg, 1979). The need to promote research–education connections amongst employees is stated in previous research showing that lecturers hold a moderately positive conception towards research integration within UASs and are sometimes cynical about the effect of research on the curriculum (Griffioen, 2022;

Griffioen & De Jong, 2010). Additionally, it should be noted that individual initiatives to connect research and education are important to promote research–education connections within UASs as well. However, two empirical studies into the implementation of blended learning (Graham et al., 2013) and online education (Casanovas, 2011) —initiatives that similarly to research–education connections require changes on a large scale within universities (Griffioen, 2022)— emphasise the essence of a strategic approach for the institutionalisation of these initiatives throughout the university. For instance, Graham et al. (2013, p. 11) concluded that 'barriers related to institutional policies, structures and lack of support can prevent large-scale faculty adoption of [blended learning], and the accompanying institutional benefits'. Thus, these findings indicate a strategic approach is needed to structurally embed research–education connections throughout a UAS's organisation.

To date, knowledge about whether UASs adopt a strategic approach towards enhancing research–education synergy is largely absent. More empirical research is therefore needed on the strategic aims of UASs in this regard. Insight into the aimed for synergies between research and education by UASs in practice broadens our understanding of and builds on previous conceptual frameworks for possible synergies such as those of Talaba (2007), Jenkins, et al. (2007) and Heggen et al. (2010). This article provides this insight by analysing the strategic policy of UASs and answering the following question: What is the intended synergy between research and education in UASs in the Netherlands?

Setting the scene for the study

This study is based on UASs in the Netherlands. The Netherlands has a binary higher education system consisting of 14 traditional research-intensive universities (in Dutch: *universiteiten*) and 36 UASs (in Dutch: *hogescholen*). The latter are central to this study and are comparable to the former polytechnics in the United Kingdom and the *Fachhochschulen* in Germany (Kulicke & Stahlecker, 2008). UASs educate students for applied professions, such as teaching, engineering, economics and physiotherapy, and they were part of secondary education until 1986, transitioning to being part of the higher education system in 1992 (Griffioen, 2013). UASs provide both undergraduate and postgraduate education with a bachelor's/master's structure. However, UAS graduates usually start working immediately after obtaining their bachelor's degree, whereas graduates from a research-intensive university often take part in postgraduation before they start working. In 1986, UASs were given the task of conducting research by law, but only in 2001 was financial support added to produce actual research activities (Griffioen et al., 2013). Over time, research has increasingly become part of UASs and has also taken up a substantial part of the curricula (Griffioen & De Jong, 2013). However, contrary to other national contexts, employees of Dutch UASs are generally employed to perform either research or teaching tasks, with a small group performing both tasks (i.e. lecturer–researchers). *Lectoren* (applied professors) are employed as heads of research groups and are generally not connected to educational programmes.

Methods

Sample and data collection

To answer the research question, a document analysis of the strategic policy documents of seven Dutch UASs (hereafter referred to as UAS A–G) was conducted. Two participating UASs initiated the project, and five UASs agreed to participate in the research through a national network of policy makers. As shown in Table 1, the sample included a mixture of large- and medium-sized UASs and multi-sectoral and single-sectoral UASs. The documents for this study were retrieved from the UASs' websites in March 2019 or provided upon request by the UASs' policy officers, resulting in $N = 16$ documents comprising university-wide institution plans, vision documents and strategic documents. Within the Dutch setting, university-wide institution plans are generally revised every five years in response to national ministerial strategic agendas and cover all policy topics. Conversely, strategic policy documents usually cover only a few topics, with a validity of 2–5 years. The differences in local policy practices result in a different number of documents per UAS.

Using university-wide policy documents to analyse UASs' strategic priorities in research–education synergy limits the understanding of UASs' strategic practices. However, scholars argue that policy documents 'serve as an embodiment of practice' (Freeman & Maybin, 2011, p. 165), in this case making higher education policy choices knowable to others over time. Therefore, policy documents are a durable and stable expression of higher education practices and perceptions and are open to re-reading, whereas real practices are not (Ashwin & Smith, 2015). Nevertheless, these university-wide policy documents do not offer a blueprint of current university practices, but they do form the basis for policy formation throughout the university and provide a guideline for the way resources should be allocated. Therefore, these documents are an important resource for gaining insights into the near-future priorities of UASs with regard to research–education synergy. Aside from the value of these documents to the universities' internal stakeholders, insights into these documents also reveal how UASs frame and position themselves in national bodies and in relation to other UASs.

Table 1: Overview of the documents included in the sample and UAS characteristics

UAS	Number of students†	Focus	Document reference	Document content
A	48.700	Multi-sectoral	A1	Institution plan
			A2	Strategic research policy
B	39.000	Multi-sectoral	B3	Institution plan
			B4	General strategic policy
			B5	Vision education
			B6	Vision practice-based research
C	4.000	Mono-sectoral	C7	Institution plan
			C8	General strategic policy
D	24.700	Multi-sectoral	D9	Institution plan
E	5.000	Multi-sectoral	E10	Institution plan
			E11	Vision practice-based research
F	14.700	Multi-sectoral	F12	Vision education
			F13	General strategic policy
G	26.000	Multi-sectoral	G14	Institution plan

	G15	Vision education
	G16	Strategic research policy

†*Numbers are rounded to the nearest hundred*

Coding and analysis

Data reduction was based on the grounded coding of all the included documents (Charmaz, 2006). Two researchers selected text sections in the format of 'education + research = synergy' in the documents of two UASs and applied grounded codes. Then, the code sets were compared, and similar codes were merged (using Atlas.ti8). This process was repeated four times until saturation of the code scheme and agreement was reached. The final code scheme was applied to all documents. To answer the central question, all code groups were qualitatively described. Table 2 (see below) presents the themes of synergy found in strategic policy documents and examples of quotes.

[INSERT TABLE 2 HERE]

Findings

This study investigates the intended synergy between research and education as formulated in the strategic policy documents of seven Dutch UASs. Overall, the strategic policy documents showed that UASs aim to connect research and education to achieve synergy across seven themes. Students, graduates and employees are under 'synergies among people', educational programmes, research and organisation-wide are under 'synergies inside the UAS organisation', and professional practice is under 'synergies outside UAS organisations'. In what follows, these findings are discussed along the three main perspectives and illustrated by quotes from the documents, which were translated from Dutch to English by the authors.

Synergies among people

The findings showed that UASs aimed to connect research and education to achieve synergies directed to different people within the UASs, including students, graduates and lecturers. Synergies directed at students and graduates prevailed the most, as they were mentioned by all of the UASs in the sample. Moreover, the UASs were specific about the particular ways in which students and graduates could improve due to research–education connections.

Synergies in students and graduates mostly referred to the abilities these groups would acquire or possess as a result of connections between research and education during their studies and to the enhancement of their knowledge (in the case of students) and attitudes (in the case of graduates). Some UASs in the sample focused on synergies among students, while others mentioned synergies among graduates more. Regarding abilities, although the UASs differed in their focus on either students or graduates, they all stated their desire to enhance the research ability of students or graduates, sometimes phrased as research skills or an inquiring attitude. UAS-D formulated it as follows:

> *'Research for students means that they develop the skills needed to make a difference in today's competitive world. Central to this are conducting research, discovering and curiosity'.* (D9; From here on, the quotes are denoted by a number referring to the UAS and the document of origin. See Table 1 for an overview of the documents).

Moreover, most UASs strived for additional abilities, such as 'a critical attitude', 'venturous abilities' and 'the ability to innovate'. Three UASs aimed for the ability of graduates to independently develop themselves and 'adjust their actions to new knowledge and changing insights in professional practice' (A1). This is also phrased as 'work evidence-based' (A1-2). The UASs intended to connect research and education to expand the knowledge base of students, for example, knowledge of the dynamics of and new insights into professional practice, as mentioned by three UASs. The UASs were often specific about the collection of abilities, knowledge and attitudes graduates or students would acquire by conducting research, as indicated in the following quote about graduates:

> *'(Learning) to do research contributes to a research-like and curious attitude, creativity and the development of a well-informed professional with a personality shaped through bildung. A professional and co-responsible civilian who knows how to develop him- or herself in a continuously changing society, who understands the meaning of social and scientific research for that society and who acts accordingly'.* (C7)

Next to synergies among students and graduates, four UASs included synergies directed at lecturers, which were mostly about the professional development of lecturers with regard to research abilities. Sometimes, the enhancement of lecturers' research abilities was intended to provide benefits for students, such as an increased ability of lecturers to 'supervise students in conducting research' (C7). According to UAS-G,

> *'Research-active lecturers especially contribute to the connection between research and education. They bring students into contact with up-to-date and inspiring research results and acquire the newest knowledge and competencies themselves'.* (G16)

Interestingly, synergies between research and education in lecturers were only directed at the benefits of educational programmes and disregarded the potential benefits of their involvement in both research and teaching for the UAS's research. The only exception was UAS-G, which emphasised that research–education connections do not only benefit educational programmes:

> *'The connection between research and education can be strengthened in both width and depth. This is not a one-way street; a close connection not only benefits education but also research. For example, because lecturers get a better grasp of their research when they explain it to students or because they receive help from students in their research'.* (G16)

The four UASs positioned different types of research–education connections to increase lecturers' research abilities, such as through internal research courses (UAS-C and G), stimulating lecturers to acquire a Master's or PhD (UAS-D), enhancing the research culture within the UAS, professors supervising lecturers in conducting research (UAS-G) or collaborative practice-oriented projects with students, researchers and partners from professional practice (UAS-B).

Synergies inside the UAS organisation

In their strategic policy documents, the UASs aimed for three ways in which connections between research and education could lead to the improvement of processes within their organisations. These processes refer to their educational programmes and the research conducted in the UASs. Some UASs also referred to organisation-wide synergies. These three variations are discussed below.

The findings showed that all UASs aimed to integrate research results or methodologies into their educational programmes to enhance the quality of these programmes, mostly in terms of being more 'up-to-date' but also in being more 'future-proof', 'socially relevant', 'inclusive' or 'contextually rich'. Three UASs aimed for research integration for the improvement of the learning environment, such as in terms of making it more 'authentic' (UAS-A), 'stimulating' (UAS-G and B), 'powerful' or 'inspiring' (UAS-B). Many UASs stressed the importance of collaborations between their educational and research programmes with external partners (i.e. regional companies, organisations, knowledge institutions and governments) to enhance the quality of their educational programmes, as this would allow them to respond quickly to developments in professional practice. The benefits these collaborations could have for the UASs' research programmes were often left out, but if they were mentioned, they were always brought up along with the benefits for educational programmes:

> *'[Centres of Expertise (i.e. departments in which stakeholders from research, education and professional practice collaborate)] contribute to the thematic orientation of educational and research programmes'.* (B6)

Aside from the benefits for educational programmes, the UASs also mentioned the benefits of connecting research and education for the UASs' research processes. For example, four UASs aimed for research–education connections to enhance their research quality. In addition, three UASs asserted that the participation of lecturers in conducting research would lead to greater research capacity, which is important for substantial knowledge development, according to some UASs. Two UASs stated that collaboration between research and educational departments could help with the thematic orientation of research programmes. Compared to the benefits for educational programmes, the benefits for research processes were mentioned less often, by fewer UASs (five out of seven) and were described with less detail. Furthermore, enhancement of the

research quality was rarely set as a stand-alone synergy and was often combined with education-oriented synergies, as in the following example:

> *'To offer high quality education and research, a sufficient number of employees is essential. A relative increase in the number of lecturers in education and research is therefore a priority'.* (A1)

The last variation in synergies inside the UAS organisation is concerned with organisation-wide synergies. These include research–education connections giving a distinctive feature to the external image of UASs, creating a shared vision among research and education-related parties and external parties and connecting research and education within UASs in general. The latter example shows that the connection between research and education is sometimes mentioned as an aim in itself, as indicated in the following quote:

> *Education taking place in projects in professional practice is an excellent opportunity to strengthen the relationship between education and research'.* (B3)

Synergies outside the UAS organisation

The UASs also aimed to connect research and education to achieve synergies outside UAS organisation. These synergies were mainly about the enhancement of society, professional practice and companies in the region.

The findings showed that UASs positioned research–education connections to contribute to innovations and the development of professional practice or solutions for societal issues. According to the UASs, this would often be done through collaborative research projects with lecturers, researchers, external partners and students as part of the curriculum, not only through the internships or graduation projects of their students but also through knowledge sharing in professional practice. Four UASs positioned their students to contribute to improving professional practice during their studies, while three different UASs set their graduates to create synergy for professional practice after their studies. For example, UAS-F stated the following:

> *'Together with companies and UASs, we give substance to the needed knowledge application. We do this through practice-based assignments, internships and research projects that are initiated by lecturers and professors. The students involved in these interventions develop the capacity to contribute to the desired development of their client or their professional practice as a professional'.* (F12)

The UASs were usually not specific about the particular stakeholders in professional practice that would benefit from research–education connections but used words such as 'professional field', 'society', 'stakeholders from the field', 'regional companies', 'businesses', 'surroundings', 'organisations' and 'enterprises'. Only UAS-D was more specific and aimed to contribute to

‘creating and preserving a strong competitive position of small- and medium-sized enterprises’ (D9). The majority of UASs also did not specify *how* stakeholders in professional practice would benefit. However, three UASs positioned research–education connections to lead to a ‘sustainable future’ (D9), ‘better quality of life and well-being in the city’ (A2), be beneficial for ‘societal and economical causes’ (A1, G16) and lead to ‘competitive products and new businesses’ (A1). In addition, UAS-B considered that collaborative projects with different stakeholders from and outside of the UAS are a ‘fruitful biotope for professional development’ (B3) for all stakeholders involved, even for partners from professional practice. Despite the general lack of specificity, these external synergies were mentioned by all UASs in the sample.

Discussion

This study investigated the intended synergy between research and education of UASs in The Netherlands according to their university-wide strategic policy. The findings show that the UASs aimed for synergy between research and education across seven themes divided into three main foci: ‘synergies among people’, ‘synergies inside the UAS organisation’ and ‘synergies outside the UAS organisation’.

The results show that the UASs aimed for synergies that reached beyond the focus of previous empirical research, which is mostly oriented towards ‘synergies among people’ (i.e. generally students and academics) (e.g. Healey, 2005; Magi & Beerkens, 2016). As previously explained, studies focusing on multiple layers or organisational perspectives are usually conceptual in nature (Jenkins et al., 2007). Therefore, the present study not only yielded new insights into the strategic intentions of UASs related to research–education connections, but also implied that the current body of empirical research only partly serves strategic policy in universities. This leaves stakeholders involved in managerial practices within universities in the dark when it comes to achieving both synergies ‘inside the UAS organisation’ and ‘outside the UAS organisation’. Therefore, future research should focus on these two other levels.

The findings also show an imbalance between research and education in the strategically intended synergies, which appear to be more like a one-way street of the enhancement of one process instead of a ‘mutual enhancement’ (Talaba, 2007, p. 4) of both processes. Most synergies were directed towards education-related stakeholders and processes as opposed to research-related stakeholders and processes, as evidenced by the number of UASs that mentioned these synergies, the frequency in the strategic documents and the level of detail applied. For example, with regard to ‘synergies among people’, all the UASs directed synergies toward students/graduates and some to lecturers, but only one UAS aimed for research–education connections to be beneficial for the research activities of its lecturer–researchers. This focus on education-oriented synergies has been recognised by other authors. According to Brew (2006, p. 146) ‘there is often a tendency for policies and strategies to be focused on the teaching side of things’. A similar focus is found in empirical research, which generally focuses on how research is beneficial to education, while the opposite effect is hardly studied (Visser-Wijnveen, 2013). For UASs, this focus on education-related synergies is not surprising, considering that traditionally, the main task of UASs is to provide education to future professionals working in professional practice (Weert & Soo, 2009).

Therefore, it is likely that narratives about research-related synergies still need to be further developed within UASs (Griffioen, 2022).

However, focussing on education-related synergies could be problematic. An organisation's strategy, among other things, promotes collective action amongst employees (Mintzberg, 1979). The current findings show that UASs' strategies now mainly promote collective action towards fostering connections for the benefit of education. One could therefore wonder if both research and education actors are evenly motivated by a skewed intended output. It is realistic to expect that research actors also need to know what's in it for them to walk the extra mile for research–education connections. UASs should therefore consider making more explicit, detailed and frequent mention of research-related synergies within their organisation-wide strategic policy documents, and communicate these synergies to research actors and departments. Additionally, further research should investigate how stakeholders within UASs are motivated to contribute to connecting research and education.

Furthermore, to ensure research and education actors work towards research–education synergy, mentioning strategic aims in university-wide policy documents is not enough. UASs should be aware that particular strategic aims have implications for other aspects of UASs' organisations, such as the structure, processes, reward systems and HR-policy, and that these aspects should be aligned with the strategic aims (Galbraith, 1977). Several authors therefore suggest alterations in these aspects to enhance research–education connections, such as equal reward systems for research and education achievements (Brew, 2006), structuring research and educational development committees together (Visser-Wijnveen, 2013), and reserve time for conducting research in student's and lecturer's schedules (Jenkins and Healey, 2005).

By analysing the university-wide strategic policy documents of UASs, this inquiry has provided an initial insight into the focus of UASs with regard to research–education synergy and reveals how policy is articulated at an institutional level. Clearly, a methodology focused on document analysis has its limitations, as it does not provide direct insight into practice. After a strategy is formulated on an institutional level, employees negotiate and come to understand the implications of the strategy on a departmental and individual level, which might differ from what was intended on an institutional level (Brew, 2006). Therefore, future research could complement the findings of this study by investigating whether the intended synergies between the research and education of UASs are realised in practice. Additionally, to provide insight into how these university-wide strategies unfold into policy and practice on lower hierarchical levels in UAS organisations, future research could analyse departmental policy and educational programme policy. This insight can be expected to provide a more detailed view into strategies on the shop-floor level compared to the institutional level. Nevertheless, the results of this study paint a clear picture of the different strategic choices UASs make in their effort to connect research and education among people, their university and their external partners. Based on these findings, more explicit choices can be made for future research and institutional policy to better connect research and education in universities.

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Table 2: Themes of intended synergies and examples of quotes

Themes	Intended synergies	Quote example
Synergies among people		
Students	Developing research, innovative and venturous abilities. Gaining knowledge of dynamics and new insights of professional practice. Being inspired and brought into contact with research. Thinking of innovative solutions, developing themselves personally and professionally.	'Research stimulates the investigative and entrepreneurial capacity of our students and is therefore part of every programme'. (E10)
Graduates	Having research, innovative and venturous abilities. Having the ability to continuously develop oneself personally/professionally, keep up with developments in professional practice and work evidence-based. Having an investigative, curious and critical attitude. Being creative and meeting the requirements of professional practice.	'Graduates can use their investigative attitude to develop certain professional products'. (G15)
Lecturers	Developing oneself professionally, developing research abilities.	'In the context of professional development, we stimulate employees to get a Master's degree and a PhD'. (D9)
Synergies inside the UAS organisation		
Educational programmes	Higher educational quality, improvement of the learning environment, guidance of thematic orientation of educational programmes, integration of research results into the educational programme, improvement and innovation of education.	'Research programmes are embedded in the educational department's research strategy and contribute to a substantive renewal of curricula'. (F12)
Research	Higher research quality, greater research capacity, expansion of knowledge development, guidance of thematic orientation of research agenda.	'Increasing the amount of applied professors and lecturers involved in research is a prerequisite to make mass'. (A2)
Organisation-wide	Gives a distinctive feature, creates a shared vision among research and education-related parties, connects research and education.	'Context-rich education […] gives [UAS-B] a distinctive feature.' (B3)
Synergies outside the UAS organisation		
Professional practice	Developing solutions for societal problems, contributing to innovating professional practice and knowledge sharing, enhancing the competitiveness of businesses, improving the quality of life in the region and the environment.	'All lecturer–researchers conduct research and teach. With this research, we want to contribute to the development of the professional field and our education'. (C7)