

VU Research Portal

Vocational career guidance in Dutch higher vocational education

te Wierik, M.L.J.

2018

document version

Publisher's PDF, also known as Version of record

[Link to publication in VU Research Portal](#)

citation for published version (APA)

te Wierik, M. L. J. (2018). *Vocational career guidance in Dutch higher vocational education: An educational and cost-benefit analysis*.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal ?

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

E-mail address:

vuresearchportal.ub@vu.nl

Chapter 5

Is Vocational Career Guidance in Higher Education Worth the Investment?

5

Abstract⁵

Questioning whether vocational career guidance is worth the investment, this study performed a break-even analysis of vocational career guidance with the objective to evaluate how much student dropout should be reduced in order to receive an institutional return on investment of vocational career guidance. With a focus on three faculties of a Dutch university of applied sciences, the costs were calculated on the basis of start-up costs, labour costs, pre measurement costs and certification costs. The benefits were derived from the former public funding model for Dutch universities of applied sciences, considering prevented dropout costs as potential benefits of vocational career guidance. As our results show, the potential benefits of vocational career guidance exceed the costs of vocational career guidance when the first-year attrition rate is reduced with 2.3 percent. In addition, vocational career guidance that is more effectively targeted at students who are at risk of dropping out can substantially increase the cost-effectiveness of vocational career guidance.

5 This chapter was submitted as: Te Wierik, M. L. J. , Beishuizen, J. J., Vossensteyn, J. J., and Van Klaveren, C. P. B. J. (submitted). Is Vocational Career Guidance in Higher Education Worth the Investment?

Introduction

Student success is a prominent theme on the higher education policy agenda worldwide. In the United States, president Obama has set an ambitious goal for the nation: having the highest proportion adults with college degrees in the world by the year 2020 (Schneider & Yin, 2011). Also in European countries, governments are engaged with student success, as policies, regulations and funding related measures are in place (Vossensteyn *et al.*, 2015). According to the European Commission, by 2020 the share of early school leavers in the European Union should be under 10 percent. At the same time, at least 40 percent of the younger generation should have a tertiary degree (European Commission, 2010). In the Netherlands, the Dutch Ministry of Education made performance agreements with all Dutch higher education institutions in 2012 with the objective to substantially improve student success rates (Review Committee Higher Education and Research, 2012). Amongst others, these agreements aimed to reduce the high costs related to students dropping out of higher education or switching their study programme. According to the Dutch Education Council (2008), high dropout rates and low completion rates are undesirably inefficient and therefore are considered to be a social problem. The annual costs of non-optimal choice of study, needless dropout, insufficient use of students' capacities and an inflexible educational system were estimated at around €7 billion (Dutch Education Council, 2008). These costs equalled more than 26 percent of the annual education expenses of the Dutch government in 2007 (Dutch Ministry of Education Culture and Science 2016).

A considerable part of these costs of dropping out is borne by individual students, each of whom may accumulate large debts in the unsuccessful pursuit of a degree and give up the higher earnings that accrue after obtaining a Bachelor's degree. But low college graduation rates also cost taxpayers and higher education institutions dearly. Every year, through governmental funding of higher education institutions, the Dutch government spends a lot of money to subsidise students who ultimately do not finish their studies. At the same time, institutions lose a valuable source of revenue when students at any moment do not return to their colleges. Investigating the financial consequences of these losses, this paper focuses on the costs and benefits of vocational career guidance as an institutional action to enhance retention and graduation in Dutch higher vocational education. In particular, a cost-benefit analysis of vocational career guidance is presented confronting the actual costs with the potential benefits¹ of vocational career guidance.

Research aim and question

As research so far has not reliably uncovered the expected benefits of vocational career guidance at institutional level, we aimed to construct a model to evaluate to what extent student dropout should be reduced in order to receive an institutional return on investment of vocational career guidance. This model was based on a break-even analysis that confronted the total costs of vocational career guidance with its potential benefits. The potential benefits of vocational career guidance were calculated by using the Dutch funding model, that allocates public funds to Universities of Applied Sciences partially on the basis of the number of students that complete and drop out of college. To be elaborated upon hereafter, the medium-sized Dutch University of Applied Sciences Windesheim served as a case study to explore under what conditions vocational career guidance can be a good investment.

Vocational career guidance as a means to enhance student retention

In an attempt to reduce the high costs of students dropping out of higher vocational education, a growing number of Dutch higher education institutions nowadays implement new vocational career guidance² practices in their curricula. According to Mittendorff (2008), vocational career guidance is not only aimed at preparing students for vocational education, but also offers continued support during their education, and is aimed at developing career competencies such as reflecting on one's ambitions and capabilities, or networking. While personal interviews are still the dominant tool, vocational career guidance includes a wide range of other services, like group discussions (intervision), printed and electronic information, school lessons, structured experience, telephone advice and on-line help (Organisation for Economic Co-operation and Development [OECD], 2004).

As one of several institutional actions that enhance retention and graduation, Tinto (2004) recommended institutions to provide students clear guidelines as to what they have to do to be successful. Concerning vocational career guidance, Tinto (1993) argued that the utilisation of counselling and advising programmes during the student career underlines the fact that not all students enter college with clearly held goals. For that reason, institutions have allocated substantial resources to advising and counselling services that intend to guide individual students along the path of goal clarification. According to Herr (2002), institutional benefits of these services may be seen in increased retention of students, therefore preserving the governmental funding per student rather than losing such funding if a student drops out. Consequently, not only the institutional expenditures but also the institutional benefits of vocational career guidance need to be monitored as

public money could be spent alternatively to enhance student retention. Following Maguire (2004), there is clearly a need to generate as much evidence as possible of the impact of vocational career guidance services, not least because of the need to support the case for sustaining, and even enhancing, the funding allocated to the activity. Therefore, this paper concentrates on the costs and potential benefits of vocational career guidance, as implemented at Windesheim University of Applied Sciences (UAS) in Zwolle, the Netherlands in 2006.

Windesheim University of Applied Sciences

Windesheim University of Applied Sciences (UAS) is a medium-sized Dutch UAS offering a wide variety of study programmes by ten different faculties. In 2006, Windesheim UAS implemented a new educational philosophy (Te Wierik, Beishuizen, & Van Os, 2014). This was meant to support the required Bachelor-Master transitions (Windesheim University of Applied Sciences, 2005) as well as to facilitate students to take more responsibility over their personal learning goals and learning process. Since then, students have to take a four-credits vocational career guidance course in each of the four-years Bachelor programme. The guidance is offered by a small group of dedicated staff and consists of a comprehensive system of activities that span the entire four years of student life from admissions to graduation. This guidance can be seen as integral vocational career guidance in which all instruments for guidance, such as the intake procedure, personal development plan, assessments, reports that demonstrate student reflection and the portfolio, have been assimilated. Of central importance is the portfolio, in which all the information derived from the other instruments and activities are collected. The use of portfolios and personal development plans is not exclusive to the Dutch context, nor to vocational education. A growing number of studies, mostly in higher education, investigate the use and effects of portfolios (Mittendorff *et al.*, 2008). Teachers providing vocational career guidance courses have to be certified to conduct this task and are assigned extra time for it. By introducing vocational career guidance, Windesheim UAS aimed an annual average decline of institutional attrition rates by at least 15 percent from 2007 onwards (Windesheim University of Applied Sciences, 2007).

Main findings concerning the potential benefits of vocational career guidance

In the international research literature, the evidence for the positive benefits of vocational career guidance is sparse, partially because the model for evaluating vocational career guidance is very complex (Maguire & Killeen, 2003). Firstly, the potential effects of vocational career guidance arise in three stages: *immediate*

attitudinal changes and increased knowledge of students; *intermediate* behavioural changes, e.g. through improved search efficiency and persistence; and *longer-term* outcomes such as greater efficiency by being more engaged, choosing more appropriate courses, and therefore reducing the likelihood of dropping out. Secondly, outcomes of vocational career guidance, both intended and unintended, behavioural and attitudinal, short- and long-term can vary widely. Thirdly, studies of behavioural outcomes may require a follow-up design as the effects may not be visible immediately and the longer the time span, the more other factors come into play. According to the OECD (2004), international evidence on the benefits of vocational career guidance in general is limited but positive. The positive impact upon short-term learning, motivational and attitudinal outcomes can be treated with a high degree of confidence and in the impact upon actual behaviour with moderate confidence. However evidence for the long-term (economic) impact on individual outcomes is very limited (OECD, 2004).

Dutch research so far is ambivalent with respect to the positive effects of vocational career guidance on student success. On the one hand, Kuijpers and Meijers (2008) concluded that investments in vocational career guidance barely yield a profit. Despite increased expenditures for vocational career guidance in recent years, student satisfaction with vocational career guidance in Dutch higher vocational education is still very limited. For example, the Netherlands Association of Universities of Applied Sciences (2009) concluded that the intensity of vocational career guidance has often been inadequate. On the other hand, vocational career guidance is indicated to contribute to a stronger link between students and their institution, to successful study, to self-conscious selection or to referrals in the first year (Netherlands Association of Universities of Applied Sciences, 2009). Recent investigations confirmed this by demonstrating that vocational career guidance enhances first-year student achievement (Te Wierik *et al.*, 2014) and might prevent first-year students from motivational loss (Te Wierik, Beishuizen, & Van Os, submitted), thus generating both material (cognitive) and immaterial (affective) benefits.

As discussed above, studies providing evidence of the economic benefits of vocational career guidance are less strong (Maguire, 2004). Furthermore, emphasis in discussion of vocational career guidance is frequently on input (e.g. resources, equipment) and process (e.g. guidance interviews, group counselling) rather than output (e.g. retention) (Herr, 2002). In order to fill this research gap, this study addressed the economic benefits of vocational career guidance at the institutional and programme level. In particular, this study aimed to lessen this research gap

by presenting a model to evaluate to what extent student dropout in Dutch higher vocational education should be reduced in order to receive an institutional return on investment of vocational career guidance. Such a model has not been found in the international literature yet and can be useful to conduct similar cost-benefit analyses in other educational contexts.

Cost-benefit analysis of vocational career guidance

When conducting a cost-benefit analysis of vocational career guidance, Herr (2002) indicated a tendency to presume identifiable benefits instead of pure empirical investigation, because it is difficult to determine a strong causal relationship between vocational career guidance and the (economic) benefits. A major issue is differentiating the effects of vocational career guidance from other factors that contribute to study behaviour. In our research, we overcame this issue by concentrating on the potential instead of the actual benefits of vocational career guidance. These potential benefits of vocational career guidance could be calculated for Windesheim UAS by using the Dutch funding model, applicable from 2006 till 2011, as it included different funding rates for students that drop out and those that complete. Because of these other factors contributing to study behaviour, this paper does not consider conceivable actual benefits of vocational career guidance in terms of changed dropout or completion rates. As we aimed to construct a model to evaluate to what extent student dropout should be reduced in order to receive an institutional return on investment of vocational career guidance, a discussion of these actual benefits would likely distract from the explication of our model.

Method

Participants

This study considered all full-time students (N = 6,377) who were enrolled in the academic year 2004, 2005, 2007 or 2008 at the faculties of Business & Economics, Information Sciences and Social Work of Windesheim UAS. Part-time and distance education students were excluded, because the literature of student attrition in distance education suggests that such studies tend to report tentative and contextualized conclusions and are surrounded by great variance and uncertainty (Nichols, 2010). In addition, students that switched between study programmes within Windesheim UAS were excluded as well, as they had already been guided during their previous year of study. Furthermore, the cohort 2006 was excluded as this was the first group receiving vocational career guidance and therefore can be treated as a transitional cohort. The study is limited to the three faculties that provided the most detailed information with respect to our research question and represent three different disciplines (i.e. economics, health care and information and communication technology) in our research population. The extent to which these faculties were a representative sample of the total Windesheim UAS is depicted in Table 1. This Table concentrates on student characteristics such as gender and previous education, because these variable are proven to have substantial impact on the success of students in UAS (Arnold & Straten, 2012).

Table 1. Descriptive statistics on the research population

		Research population		Total Windesheim UAS population	
		<i>n</i>	Percent	<i>n</i>	Percent
Gender	Male	3,286	52	9,235	48
	Female	3,091	48	10,073	52
Previous education	MBO	2,546	40	5,770	30
	HAVO	3,058	48	8,640	45
	VWO	332	5	1,252	6
	Other	441	7	3,646	19

Note. MBO = secondary vocational education; HAVO = higher general secondary education; VWO = pre-university education.

As Table 1 shows, our research population covered one third of the entire student population of Windesheim UAS. The data show a significant overrepresentation of males in our sample ($\chi^2(1, N = 19,308) = 52.21, p < .001$). As male students generally are less successful in higher vocational education compared to female students (Kusurkar, ten Cate, Vos, Westers, & Croiset, 2013; Vallerand & Bissonnette, 1992), this overrepresentation could cause a slight underestimation of the benefits of vocational career guidance. Regarding previous education, both the proportion of participating students from secondary vocational education and higher general secondary education turned out to be higher compared to the corresponding non-participating students. A chi-square test ($\chi^2(4, N = 19,308) = 1,089.70, p < .001$) statistically confirmed this overrepresentation of students from secondary vocational education and higher general secondary education in our sample. As students from secondary vocational education and higher general secondary education generally are less successful in higher vocational education compared to students from pre-university education (Netherlands Association of Universities of Applied Sciences, 2008), this overrepresentation can cause a slight underestimation of the benefits of vocational career guidance as well.

Materials

As an important determinant of the potential benefits of vocational career guidance, this section briefly discusses the funding model of Dutch higher vocational education that was valid during the years we collected our data (2004 - 2008). Dutch UAS's received a lump sum budget from the Dutch Ministry of Education for the operation of their accredited study programmes. Although the lump sum was composed of funds for labour, material and housing expenses, institutions were free to allocate this lump sum. In addition to governmental funding, all fulltime students were charged a yearly uniform tuition fee of around €1,800 per student per year in the period of study. Students who dropped out were only charged till their moment of dropout.

As housing expenses did not directly relate to the number of students and student success, they were excluded from the scope of our research. We concentrated on the operating grants in the former Dutch funding model.

This operating grant was based on the educational demand of students and divided in a college operating part and an institutional operating part. This educational demand was calculated annually at the 1st of October by multiplying the total number of enrolled students of a college by an educational demand index. This index distinguishes between more- and less expensive students as well as between

students who drop out and those that complete their studies. In the next three steps, we will successively explain the college operating part, the educational demand index and the institutional operating part.

In the first step, the college operating part is determined by the total number of students enrolled in a college and indexed by using different tariffs for programmes with more or less intensive labour and material expenses. As such, the funding tariff is indexed at 1.0 in case of a regular programme, 1.28 in case of science and engineering programmes and 1.5 in case of health care programmes. Based on these funding indexes, the college operating part was calculated as the sum of the total number of students multiplied by the applicable funding indexes.

In the second step, and particularly important for the potential benefits of vocational career guidance, the college operating part was multiplied by the educational demand index. This index depended on students who completed their programmes and those who dropped out and was calculated as follows:

$$\text{Educational demand index} = 1.35 * \frac{(N_{\text{dropouts}} * 1.35) + (N_{\text{graduates}} * 4.5)}{\sum \text{years of enrolment dropouts and graduates}} - 0.35$$

As this formula shows, the educational demand index was calculated annually by multiplying the number of dropouts and graduates by a normative course duration of 1.35 and 4.5 years respectively and subsequently dividing this sum by the actual course duration of these dropouts and graduates. The constants 1.35 and 0.35 before and after the fraction in the formula were decreed by the Dutch Ministry of Education (2008) and adjusted the educational demand index for higher or lower tuition fees in case the actual course duration of dropouts and graduates exceeded or fell short of the normative course duration. Depending on the actual course duration of dropouts and graduates, the educational demand index could be equal to, smaller than or greater than 1.0. When dropouts and graduates had actually been enrolled in 1.35 and 4.5 years respectively, the educational demand index equalled 1.0. However, when dropouts and graduates had actually been enrolled in less than 1.35 and 4.5 years respectively, the educational demand index was greater than 1.0. Likewise, the educational demand index was smaller than 1.0 when dropouts and graduates had actually been enrolled in more than 1.35 and 4.5 years respectively. Therefore, the normative course duration in the educational demand index formula was particularly important for the potential benefits of vocational career guidance. By virtue of this index, a course duration of 1.35 years was funded in case

of a student dropping out. Likewise, a course duration of 4.5 years was funded in case of a graduating student. Expecting vocational career guidance to result in an increased number of students graduating instead of dropping out, public funding of Windesheim UAS consequently increased as the graduates were funded for an extra 3.15 years (calculated as the difference between funding terms 4.5 and 1.35 years in case of graduation and dropout respectively) compared to dropouts.

In the third and final step, the institutional operating part was calculated as the sum of all college operating parts and then taken as a percentage of the total educational demand as calculated for all UAS in the Dutch higher education system. This proportion multiplied by the total public budget, made available by the Dutch Ministry of Education for teaching in the UAS sector, determined the total monetary budget of one particular UAS.

Procedure

Based on data of undergraduate full-time students from three faculties of Windesheim UAS, we conducted a cost-benefit analysis of vocational career guidance. Obtained from the financial administration offices, distinguished costs of vocational career guidance included start-up costs, labour costs, pre measurement costs and certification costs. As discussed before, the actual benefits of vocational career guidance could not reliably be investigated because of other contributory factors. We therefore concentrated on potential instead of actual benefits of vocational career guidance, derived from the additional public funding UAS receive for students that graduate (as a result from vocational career guidance) compared to those that drop out. To assess the break-even point of vocational career guidance, costs and potential benefits (as explained below) were confronted in order to conclude when vocational career guidance at Windesheim UAS can be regarded as a good investment by reducing student dropout.

Costs

With respect to cohorts 2007 and 2008, we distinguished the following costs of vocational career guidance:

- *Start-up costs:* At institutional level, start-up costs were made from 2004 to 2009 in order to develop vocational career guidance courses. In 2004, Windesheim UAS hired external expertise to develop the institutional point of view regarding vocational career guidance. Subsequently, in 2005 a sequence of questionnaires on competencies, skills, motivation, learning style and choice of future profession was implemented. In addition, vocational career guidance teachers

were instructed to interpret the questionnaires' results and were trained for their vocational career guidance task. Furthermore, in 2009 Windesheim UAS evaluated their vocational career guidance courses in order to monitor vocational career guidance quality and exchange experiences of both students and vocational career guidance teachers.

In order to allocate the institutional start-up costs to the three faculties involved in our research, we distributed the institutional start-up costs among the faculties in proportion of the total number of enrolled students of a cohort in the respective faculties compared to the total institution. At the same time, we depreciated faculty start-up costs as long-term investment in vocational career guidance. Based on an assumed useful life of five years, we calculated a straight line depreciation rate of 20 percent per year. Since the 2009 evaluation of vocational career guidance courses had no long-term character, we did not depreciate these start-up costs.

- *Labour costs:* labour costs were made to remunerate the teachers providing the vocational career guidance courses (all employees in salary scale 12 of Dutch collective agreement in higher vocational education). These costs were based upon the annual amount of time spent at individual versus class vocational career guidance for each faculty involved. As noted in an earlier study, the time spent at individual vocational career guidance was 45, 30 and 90 minutes per student in case of the faculties of Business & Economics, Information Sciences and Social Work respectively. The time spent at class vocational career guidance was 840, 1,845 and 1,620 minutes per class in case of the faculties of Business & Economics, Information Sciences and Social Work respectively related to a group size of 6, 6, and 12 students respectively (Te Wierik *et al.*, 2014). Both the annual time spent on individual and class vocational career guidance and their related group sizes were prescribed by each faculty involved and did not depend on the student demand for vocational career guidance.
- *Pre measurement costs:* As a starting point of vocational career guidance at student level, pre measurement data were collected at the beginning of the first year by means of a compulsory sequence of questionnaires, which were externally handled and licensed. As a consequence, Windesheim UAS was charged a handling fee (per filled questionnaire) and a license fee (an indexed annual fee). Both fees were distributed among the faculties involved in proportion of the total number of enrolled students of a cohort. Other pre measurement costs were labour costs of employees at an intermediate level concerning preliminary group instruction of 30 minutes, a group intake of 30 minutes including check-in, instruction

and surveillance time for the filling out of the questionnaires and an individual feedback conversation of 30 minutes afterwards.

- *Certification costs:* To enhance and monitor vocational career guidance quality, training and certification costs were made to professionalize and certify vocational career guidance teachers. Vocational career guidance teachers were trained and subsequently certified at basic, advanced or expert level. The basic level covered an introduction into vocational career guidance, whereas the advanced level resulted in admission to the expert level. Vocational career guidance experts were qualified to train and certify vocational career guidance colleagues at lower levels. Labour costs per certificate were two, three and three hours of employees at an intermediate level in case of basic, advanced and expert level respectively and half an hour of employees at lower level in case of all certification levels involved.

Potential benefits

In our research, the potential benefits of vocational career guidance were related to the potential financial effects of vocational career guidance on the funding of Windesheim UAS as a Dutch university of applied sciences. As explained before, the former Dutch funding model for UAS funded a student that dropped out for a duration of 1.35 years compared to 4.5 years in case of a graduating student. As a result, vocational career guidance could yield financial benefits to an institution if it prevented students from dropping out. Expecting vocational career guidance to result in an increased number of students graduating instead of dropping out, public funding of Windesheim UAS consequently would increase as the graduates were funded for an extra 3.15 years compared to dropouts. In order to understand the potential benefits of vocational career guidance, we needed to know the financial losses of student dropout in case of Windesheim UAS. Therefore, this paper expresses the potential benefits of vocational career guidance in terms of the prevention of student dropout. As immaterial benefits of vocational career guidance are difficult to capitalize because of their intangible nature, we did not assess these potential benefits in this research.

Cost-benefit analysis of vocational career guidance

In order to determine whether vocational career guidance at Windesheim UAS could be a good investment to reduce student dropout, we confronted costs and potential benefits of vocational career guidance as depicted in Table 2.

Table 2. A cost-benefit analysis of vocational career guidance at Windesheim UAS

	Category	Financial effect
Costs	Development	Start-up costs
	Teacher effort	Labour costs
	Assessment	Pre measurement costs
	Professionalization	Certification costs
Potential benefits	Preventing dropout	Potentially increased revenues from the public funding model

Regarding the costs in Table 2, the distinction between fixed or variable costs in some cases was very clear. For instance, the start-up costs at institutional level were necessary fixed costs in order to develop the vocational career guidance courses. However, this distinction was more difficult to make in case of labour costs such as class vocational career guidance. Based on the actual vocational career guidance costs of cohorts 2007 and 2008, we therefore expressed the total costs of vocational career guidance as a function of the total number of students and concurrently subdivided these total costs in a fixed and a flexible part, using the curve estimation option of linear regression in SPSS. Considering the potential benefits of vocational career guidance as prevented dropout costs, we expressed the total costs of student dropout as a similar function of the total number of students, using the former Dutch funding model of higher vocational education. Subsequently, total costs of vocational career guidance and total costs of student dropout were graphically confronted, resulting in a cost-benefit analysis of vocational career guidance. Finally, we expressed both total costs and total potential benefits of vocational career guidance as a function of the first-year attrition rate. Confronting total costs of vocational career guidance with total potential benefits of vocational career guidance, we assessed the break-even point of vocational career guidance in order to conclude whether vocational career guidance at Windesheim UAS can be a good investment to reduce student dropout.

Results

Presenting our research findings, the consecutive parts of this section concern the results in terms of costs and potential benefits of vocational career guidance. Subsequently, a cost-benefit analysis of vocational career guidance is presented that finally results in a break-even analysis of vocational career guidance at Windesheim UAS.

Costs

Compiled with respect to cohorts 2007 and 2008 and calculated as explained before, total costs of vocational career guidance of the three faculties involved are presented in Table 3.

Table 3. Costs of vocational career guidance at Windesheim UAS in €

Faculty	Start-up costs	Labour costs	Pre measurement costs	Certification costs	Total costs
Cohort 2007					
SBE	7,110	116,724	64,329	11,923	200,086
SIS	1,485	42,054	13,434	5,875	62,848
SSW	5,685	111,657	33,716	13,351	164,409
Cohort 2008					
SBE	11,003	128,224	46,902	0	186,129
SIS	2,181	44,848	14,070	4,397	65,496
SSW	9,343	130,466	39,825	11,687	191,321

Note. SBE = faculty of Business & Economics. SIS = faculty of Information Sciences. SSW = faculty of Social Work.

For all faculties and all cohorts, Table 3 shows that total costs of vocational career guidance consisted for approximately 70 percent of labour costs and for more than 20 percent of pre measurement costs. Taken together, certification costs and start-up costs accounted for approximately 10 percent of total vocational career guidance costs.

Based on the actual costs of cohorts 2007 and 2008 as shown in Table 3, the total costs of vocational career guidance can be expressed as a function of the total number of students. Consisting of a fixed and a flexible part, we determined the total costs of vocational career guidance in terms of the total number of students (n) to be

$$\text{Total costs of vocational career guidance} = 212,055 + 243 * n$$

As this formula shows, fixed costs of vocational career guidance are relatively high compared to variable costs. This high portion of fixed costs is explained by the compulsory character of vocational career guidance. As all students had to take a four-credits vocational career guidance course in each year of their four-year Bachelor programme, only a small part of total vocational career guidance costs varied with the total number of students. Consequently, the portion of variable costs in total costs of vocational career guidance is relatively low compared to fixed costs.

Potential benefits

In this section, we relate the potential benefits of vocational career guidance to the financial effects of vocational career guidance on the funding of Windesheim UAS. Considering the potential benefits of vocational career guidance as prevented dropout costs, we expressed the total costs of student dropout as a function of the total number of students. Expecting vocational career guidance to result in an increased number of students graduating instead of dropping out, public funding consequently would have increased as the graduates were funded for an extra 3.15 years compared to dropouts. Based on an average annual public funding of €5,000 in 2007 and 2008 (Dutch Ministry of Education Culture and Science, 2007), the total costs of student dropout in terms of the total number of students (n) can thus be calculated as

$$\text{Total costs of student dropout} = 3.15 * 5,000.00 * n = 15,750.00 * n$$

As this formula shows, total costs of student dropout only vary with the total number of students. Consequently, the potential benefits of vocational career guidance completely depend on the number of students that vocational career guidance prevents from dropping out.

Cost-benefit analysis of vocational career guidance

Now that we framed the cost functions of vocational career guidance and student dropout, both cost functions can be combined into a cost-benefit analysis of vocational career guidance as presented in Figure 1.

Total costs of vocational career guidance and student dropout at Windesheim UAS

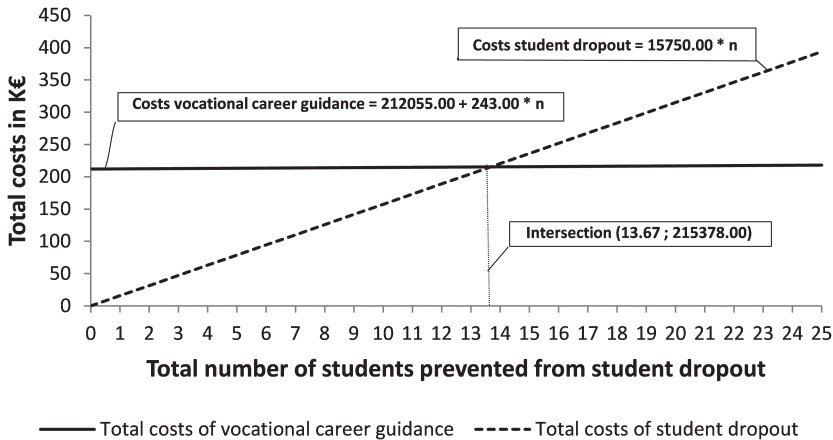


Figure 1. Total costs of vocational career guidance and student dropout at Windesheim UAS

As discussed before, fixed costs of vocational career guidance are relatively high compared to variable costs. As a consequence, total costs of vocational career guidance are shown in Figure 1 as a nearly horizontal straight line starting from a total amount of fixed costs of K€ 212. In contrast, the total cost of student dropout only vary with the total number of students and consequently appear in Figure 1 as a steep straight line starting from the origin. As Figure 1 indicates, the total costs of vocational career guidance and student dropout intersect at a total amount of 13.67 students. In other words, the total costs of student dropout exceed the total costs of vocational career guidance from 14 students onwards. Thus if we define the potential benefits of vocational career guidance as the prevented costs of student dropout, the potential benefits of vocational career guidance exceed the costs of vocational career guidance if 14 students or more are prevented from dropout as a result of vocational career guidance.

Instead of looking in Figure 1 at the absolute number of students that need to be prevented from dropout, the same model could also be expressed in terms of a required decline in the first-year attrition rate. For this purpose, the average first-year attrition rate of the considered three faculties is assumed to be 33 percent. This

percentage reflects the attrition rate for student cohort 2008 and is representative for other student cohorts as well. In addition, the total student population of the considered three faculties is assumed to include 1,800 students. This number reflects the total population of student cohort 2008 and is representative for other student cohorts as well.

As all students had to take a four-credits vocational career guidance course in each year of their four-year Bachelor programme, the total costs of vocational career guidance equal €649,455. Expecting vocational career guidance to result in an increased number of students graduating instead of dropping out, the potential benefits of career guidance linearly depend on the first-year attrition rate. In this particular case, if the first-year attrition rate is reduced to 30,71 percent, then the potential benefits of career guidance equal $0.0229 * 1,800 * 15,750 = €649,455$. In other words, the total potential benefits of vocational career guidance exceed the total costs of vocational career guidance when the first-year attrition rate is reduced with round 2.3 percent to 30.71 percent. Based on the assumed cohort size and attrition rate of 1,800 students and 33 percent respectively, this required reduction of 2.3 percent results in a total amount of 14 students or more to be prevented from dropout as a result of vocational career guidance (as depicted in Figure 1).

Conclusions

This article presents a model to evaluate to what extent student dropout should be reduced in order to receive an institutional return on investment of vocational career guidance. Such a model can be useful to conduct similar cost-benefit analyses in other educational contexts. As our results showed, we determined a total amount of 14 students to be the break-even point of vocational career guidance at Windesheim UAS. In other words, the potential benefits of vocational career guidance exceed the costs of vocational career guidance when 14 students or more are prevented from dropout as a result of vocational career guidance. Converted to a reduction in first-year attrition rate of the three faculties involved, the potential benefits of vocational career guidance exceed the total costs of vocational career guidance from a first-year attrition rate reduction of round 2.3 percent.

A first conclusion is that the costs of vocational career guidance at Windesheim UAS are mostly fixed costs, because all students had to take a four-credits vocational career guidance course in each year of their four-year Bachelor programme. As a result, the variable costs are limited. One could question whether this is the most efficient model of vocational career guidance.

On the opposite, the costs of student dropout at Windesheim UAS strongly vary with the number of students that drop out. Thus the potential benefits of vocational career guidance completely depend on the number of students that vocational career guidance prevents from dropping out, which could make relatively small reduction in the number or proportion of dropouts make vocational career guidance cost-effective. Particularly because each student that is prevented from dropout would already generate over €15,750 additional revenues.

Discussion

This article demonstrates the potential benefits of vocational career guidance as an institutional action to enhance retention and graduation in Dutch higher vocational education. Such an analysis has not been found in the international literature yet.

As our results show, we determined a surprisingly small total amount of 14 students to be the break-even point of vocational career guidance at Windesheim UAS. In other words, the potential benefits of vocational career guidance exceed the costs of vocational career guidance when only 14 students or more are prevented from dropout as a result of vocational career guidance. Converted to a reduction in first-year attrition rate of the three faculties involved, the potential benefits of vocational career guidance exceed the total costs of vocational career guidance from a first-year attrition rate reduction of round 2.3 percent. Compared to the average first-year attrition rate of the three faculties involved in case of cohort 2008 (i.c. 33 percent), the needed reduction in first-year attrition rate to recover the vocational career guidance costs can be interpreted as feasible. The research question, whether vocational career guidance at Windesheim UAS is worth the investment is therefore, and likely, yes.

However, a critical note is that the compulsory character of vocational career guidance restricts the maximum possibility to recover the vocational career guidance costs. As all students have to take a four-credits vocational career guidance course in each year of their four-year Bachelor programme, fixed costs of vocational career guidance at Windesheim UAS are relatively high compared to variable costs. Although all students have to take this vocational career guidance course, only a part of them will actually be preserved from dropout and will thus be contributing to the recovery of vocational career guidance costs. Therefore, custom-made adoption of vocational career guidance in favour of students having an increased likelihood of dropping out is important in order to maximize the possibility to reduce institutional student attrition. In particular, targeting vocational career guidance solely to students at risk will increase the vocational career guidance time per student both quantitatively and qualitatively. In our model, the proportion of fixed costs compared to variable costs of vocational career guidance will consequently decrease, while more vocational career guidance time per student is allocated to those who really need it. This decreasing proportion of fixed to variable costs will steepen the total costs of vocational career guidance as depicted in Figure 1. As a consequence, the depicted break-even point of vocational career guidance will shift to the right, resulting in more students prevented from

student dropout. We therefore recommend institutions to reserve vocational career guidance solely to students at risk, in order to maximize the possibility to recover the vocational career guidance costs.

Finally, we recommend a thorough preparatory institutional investigation of the potential success of vocational career guidance investments. From a theoretical point of view, an important dimension of investment in human capital is that of *risk and uncertainty* (Mayston, 2002). Investment in human capital, like vocational career guidance at Windesheim UAS, may involve a large element of sunk costs (i.e. a high portion of fixed costs) that cannot easily be recovered if wrong institutional choices are made. Therefore, investment in vocational career guidance to some extent imply certain *risks* which higher educational institutions ideally minimize in advance by benchmarking similar successfully undertaken investments. In addition, whilst the costs of future investments in vocational career guidance can be assessed rather well on beforehand, the investment decision itself is frequently surrounded by great *uncertainty* about future results and returns on investment. Therefore, it is essential to have in advance the highest possible institutional certainty about the potential success of vocational career guidance investments to prevent dropout, as to minimize the risk of large sunk costs that afterwards can laboriously be recovered.

Limitations

We are well aware that this study has its limitations. Firstly, potential benefits of vocational career guidance include both material and immaterial benefits. As we did not assess immaterial benefits because of their intangible nature, our cost-benefit analysis can be considered as conservative regarding the potential benefits of vocational career guidance. Secondly, our research concerns Windesheim UAS which is only one Dutch university of applied sciences. Though our methodological approach presumably incorporates valuable insights for other Dutch UAS institutions, individual contextual factors may impact the relevance of our model, e.g. depending on their model of vocational career guidance, particular student population characteristics, etc. Another limitation concerns the fact that the Dutch funding model since 2011 does no longer make the explicit distinction between dropouts and graduates. The current model provides a bonus per graduate, however, at a lower level than the €15,750. This will definitely impact negatively on the cost-benefit analysis. Finally, we did not include potential effects of governmental actions at system level, for example related to the financial system of students grants and loans. However, our model can similarly be tailored to these potential effects at system level if desired.

Direction for future research

As indicated by our limitations, there are several possible directions to refine our research. Most important is the assessment of immaterial benefits in order to broaden and deepen our cost-benefit analysis. This future research can add to our conclusion, that custom-made adoption of vocational career guidance in favour of students standing a chance of dropping out is significant in order to maximize the possibility to reduce institutional student attrition.

Notes

1. In this chapter we use the potential benefits of vocational career guidance as a proxy for the real benefits, because it is difficult to determine a strong causal relationship between vocational career guidance and the real (economic) benefits (Herr, 2002)
2. In this chapter we refer to 'vocational career guidance' rather than 'vocational career counselling', which is more common in the USA and Canada (Lundahl & Nilsson, 2009)

References

- Arnold, I. J. M., & Straten, J. T. (2012). Motivation and Math Skills as Determinants of First-Year Performance in Economics. *The Journal of Economic Education*, 43(1), 33-47. doi:10.1080/00220485.2012.636709
- Dutch Education Council. (2008). *A successful start in higher education*. Retrieved from http://www.onderwijsraad.nl/upload/english/publications/a_succesfull_start_in_higher_education.pdf
- Dutch Ministry of Education Culture and Science. (2007). *OCW Jaarlijkse Rijksbijdragebrief Christelijke hogeschool Windesheim [Annual announcement of governmental funding Windesheim University of Applied Sciences]*. The Hague, the Netherlands.
- Dutch Ministry of Education Culture and Science (2008). *Wijziging Uitvoeringsbesluit Wet op het Hoger onderwijs en Wetenschappelijk onderzoek [Amendment of Implementation Higher education and Research Act]*. Retrieved from <https://zoek.officielebekendmakingen.nl/stb-2008-146.html>.
- Dutch Ministry of Education Culture and Science (2016). *Onderwijs in cijfers: Uitgaven OCW [Education in figures: Expenses Ministry of Education Culture and Science]*. Retrieved from <https://www.onderwijsincijfers.nl/kengetallen/sectoroverstijgend/financien/uitgaven-ocw>.
- Dutch Ministry of Education Culture and Science. (2016). *Onderwijs in cijfers: Uitgaven OCW [Education in figures: Expenses Ministry of Education Culture and Science]*. Retrieved from <https://www.onderwijsincijfers.nl/kengetallen/sectoroverstijgend/financien/uitgaven-ocw>
- European Commission. (2010). *EUROPE 2020: a strategy for smart, sustainable and inclusive growth*. Retrieved from <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF>
- Herr, E. L. (2002). The Costs/Benefits of Career Development Interventions: A Practitioner's Perspective. In Bezanson, L. & E. O'Reilly (Eds.), *Making Waves: Volume 2, Connecting Career Development with Public Policy* (Vol. 2, pp. 25-30). Ottawa: Canadian Career Development Foundation.
- Kuijpers, M., & Meijers, F. (2008). *Loopbaanleren en -begeleiden in het HBO [Career learning and career guiding in higher vocational education]*. The Hague, the Netherlands.
- Kusurkar, R., ten Cate, O., Vos, C., Westers, P., & Croiset, G. (2013). How motivation affects academic performance: a structural equation modelling analysis. *Advances in Health Sciences Education*, 18(1), 57-69. doi:10.1007/s10459-012-9354-3
- Lundahl, L., & Nilsson, G. (2009). Architects of their own future? Swedish career guidance policies. *British Journal of Guidance & Counselling*, 37(1), 27 - 38.
- Maguire, M. (2004). Measuring the Outcomes of Career Guidance. *International Journal for Educational and Vocational Guidance*, 4(2-3), 179-192. doi:10.1007/s10775-005-1022-1
- Maguire, M., & Killeen, J. (2003). *Outcomes from career information and guidance services*. Paper presented at the OECD Career Guidance Policy Review, Paris. www.oecd.org/edu/careerguidance
- Mayston, D. (2002). *Assessing the Benefits of Career Guidance*. Occasional paper. University of Derby.
- Mittendorff, K., Jochems, W., Meijers, F., & den Brok, P. (2008). Differences and similarities in the use of the portfolio and personal development plan for career guidance in various vocational schools in the Netherlands. *Journal of vocational education & training*, 60(1), 75-91.
- Netherlands Association of Universities of Applied Sciences. (2008). *Feiten en cijfers: afgestudeerden en uitvallers in het hoger beroeps onderwijs [Facts and figures: graduates and dropouts in higher vocational education]*. The Hague, the Netherlands.
- Netherlands Association of Universities of Applied Sciences. (2009). *Dedicated to quality*. The Hague, the Netherlands.
- Nichols, M. (2010). Student perceptions of support services and the influence of targeted interventions on retention in distance education. *Distance Education*, 31(1), 93 - 113.
- Organisation for Economic Co-operation and Development. (2004). *Career Guidance and Public Policy: Bridging the Gap*. Retrieved from <http://www.oecd.org/dataoecd/33/45/34050171.pdf>
- Review Committee Higher Education and Research. (2012). *Performance Agreements Higher Education and Research*. Retrieved from <http://www.rcho.nl//asp/invaldo.asp?t=show&var=793&fontsize=11>
- Schneider, M., & Yin, L. (2011). *The high cost of low graduation rates: How much does dropping out of college really cost?* Retrieved from http://www.air.org/sites/default/files/downloads/report/AIR_High_Cost_of_Low_Graduation_Aug2011_0.pdf

- Te Wierik, M. L. J., Beishuizen, J. J., & van Os, W. (2014). Career guidance and student success in Dutch higher vocational education. *Studies in Higher Education*, 1-15. doi:10.1080/03075079.2014.914905
- Te Wierik, M. L. J., Beishuizen, J. J., & van Os, W. (submitted). Career guidance and student motivation in Dutch higher vocational education.
- Tinto, V. (1993). *Leaving college : rethinking the causes and cures of student attrition* (2nd ed.). Chicago: University of Chicago Press.
- Tinto, V. (2004). *Student Retention and Graduation: Facing the Truth, Living With the Consequences*. (Occasional paper 1). The Pell Institution for the Study of Opportunity in Higher Education, Washington, DC.
- Vallerand, R. J., & Bissonnette, R. (1992). Intrinsic, Extrinsic, and Amotivational Styles as Predictors of Behavior: A Prospective Study. *Journal of Personality*, 60(3), 599-620. doi:10.1111/j.1467-6494.1992.tb00922.x
- Vossensteyn, J.J., A. Kottmann, L. Cremonini, E. Hovdhaugen, B. Jongbloed, F. Kaiser, B. Stensaker, L. Thomas, M. Unger and S. Wollscheid (2015), Dropout and Completion in Higher Education in Europe, Main report, Luxembourg: Publications Office of the European Union. Retrieved from http://ec.europa.eu/dgs/education_culture/repository/education/library/study/2015/dropout-completion-he_en.pdf
- Windesheim University of Applied Sciences. (2005). Windesheim Onderwijs Standaarden [Windesheim Educational Standards]. *Versie 2.6.1.cvb*.
- Windesheim University of Applied Sciences. (2007). Begroting 2007 [Budget 2007]. *CuB-besluit nr. 435*.

