

VOCATIONAL CAREER GUIDANCE IN DUTCH HIGHER VOCATIONAL EDUCATION

**AN EDUCATIONAL AND
COST-BENEFIT ANALYSIS**

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***Vocational career guidance
in Dutch higher vocational education***

An educational and cost-benefit analysis

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Vocational career guidance in Dutch higher vocational education

An educational and cost-benefit analysis

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*I've been drivin' all night,
my hand's wet on the wheel*



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Chapter 1

Introduction

A Bachelor's degree offers individuals long-term cognitive, social, and economic benefits that are passed down to future generations, enhancing the quality of life of the families of college-educated persons, the communities in which they live, and society at large (Kuh et al. 2008). Unfortunately, too many students who begin college leave before completing degrees. Only 60 per cent of US full-time students from entry cohort 2008 who enrolled at four-year institutions completed Bachelor's degrees within six years at the institutions where they started (U.S. Department of Education 2016). Furthermore, a survey by the Organisation for Economic Cooperation and Development (OECD) revealed that "on average across countries with true-cohort data (data on individual students), 41% of students who enter a Bachelor's or equivalent programme graduate within the theoretical duration of the programme, although sometimes from a different educational level. Within three years after the theoretical duration of the programme, the average completion rate increases to 69%." (OECD 2016). In the Netherlands, around 35 per cent of first-year students at Dutch universities of applied sciences leave or switch before or at the end of their first year (Netherlands Institute for Social Research 2016).

The consequences of so many students leaving higher education are not trivial, both for students and educational institutions as well as society:

- For students, student dropout has obvious psychological, economical, and social ramifications including, for instance, students who undergo loss of self-esteem due to the decision to leave college (Vallerand et al. 1997). These ramifications affect students differently according to their level of maturity, readiness for college, or personal feelings of belonging within a college. Whereas the decision to leave college may be permanent for some students, other students will take time off to clarify academic and career decisions, deal with external circumstances, or simply grow up (Barefoot 2004);
- For educational institutions, the consequences of high rates of student departure, though measured in different terms, are of no less concern (Tinto 1993). As Kamphorst (2013) argued, Dutch universities of applied sciences appear to have been successful in recent years in fulfilling the desirable societal aim of expanding education, as "they offer higher vocational education to a growing number of students, which has resulted in increased output in terms of the supply of educated professionals in labour markets. However, this quantitative growth has also been somewhat thwarted by a lack of efficiency, in terms of costs per student and lack of effectiveness, in the form of dropout rates and study delays." (Kamphorst 2013, p. 2);

- For society, the occupational, monetary and other societal rewards of higher education to individuals are largely conditional on being awarded a college degree (Tinto 1993). Therefore, dropping out of college is not only an educational problem but a significant social problem also (Vallerand et al. 1997, p. 1161).

From a financial point of view, student attrition implies considerable costs in various areas, both for students and educational institutions as well as society:

- Students ‘waste’ their study efforts by leaving without a degree, although what students gain by undergoing higher education for a limited time may occasionally outweigh the cost they incurred (Yorke and Longden 2004);
- Institutions lose their financial investments and have to face reduced financial resources when students leave. The experience of greatly reduced financial resources has led institutions to appreciate the necessity of retaining as many of their students as possible (Tinto 1993);
- Society faces a waste of money, low societal value from study efforts with high costs from the misuse of tax payers’ money and low completion rates. Therefore, the government or funding body is likely to be concerned that the funds it provides for the system are not being used to maximum effect (Yorke and Longden 2004). As student attrition implies considerable costs in various areas, enhancing student success is of utmost importance not only for students and educational institutions but also for society.

As one of several institutional actions that enhance retention and graduation, Tinto (1993) recommended that institutions should provide students with clear guidelines as to what they have to do to be successful. Following Tinto (1993), a growing number of vocational education and training institutions in the Netherlands are now implementing new vocational career guidance¹ practices in their competence-based approaches to learning. According to the OECD (2004), “career guidance refers to services intended to assist people, of any age and at any point throughout their lives, to make educational, training and occupational choices and manage their careers”. While personal interviews are still the dominant tool, career guidance comprises a wide range of other services such as group discussions, printed and digital information, vocational courses, structured experience, telephone advice and on-line help (OECD 2004, p. 19). Concerning vocational career guidance, Tinto (1993) argued that the need to use counselling and advisory programmes during the student’s career underlines the fact that not all students enter college with clearly set goals. For that reason, institutions have allocated substantial resources to advisory and counselling services that intend to guide individual students along

the path of goal clarification. According to Herr (2002), the institutional benefits of these services may be seen in increased student retention, thus maintaining 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 in other ways to enhance student retention.

Unfortunately, international research so far is ambivalent about the benefits of vocational career guidance, particularly because the model for correctly evaluating vocational career guidance is very complex (Maguire and Killeen 2003). First, the potential effects of vocational career guidance manifest at three stages (OECD 2004, p. 33): immediate attitudinal changes and increased knowledge; intermediate behavioural changes, for example through improved search efficiency and persistence or entering a particular course, and longer-term outcomes such as success and satisfaction. Second, outcomes of vocational career guidance, both intended and unintended, behavioural and attitudinal, short- and long-term, can vary widely. According to the OECD (2004), "obtaining clear answers about impacts under these circumstances requires large-scale research with complex experimental designs and statistical controls". As such research is known to be lengthy and expensive, only limited studies have been conducted to date. Third, studies of behavioural outcomes require a follow-up plan, which raises a number of difficulties (OECD 2004). Not only may the effects not be visible for some time, but also the longer the time that elapses, the more other factors come into play. As indicated by the OECD (2004, p. 35), "studies with control groups are particularly difficult to sustain over extended periods: contact cannot be indefinitely extended, nor can guidance be indefinitely denied". To sum up, and as further illustrated hereafter, international evidence on the benefits of vocational career guidance in general is limited but positive (OECD 2004). Most of the existing evidence relates to learning outcomes, first of all because learning outcomes are immediate and therefore relatively easy and cheap to measure (OECD 2004, p. 34). Furthermore, learning outcomes directly represent the aims of vocational career guidance interventions, and can thus be appropriately measured. A review by Killeen and Kidd (1991) of 40 (mainly United States) studies, as reported by the OECD (2004), found positive results of vocational career guidance interventions in 30 of these 40 studies. Similar conclusions have been found in more extensive and more rigorous United States meta-analyses of good-quality controlled studies (OECD 2004). Among others, these studies concluded that (OECD 2004, p. 34):

- career interventions are effective with most age-groups;
- individual guidance has the biggest effect, followed by group counselling and classroom interventions;
- counsellor-free interventions have the least effect;
- computer-delivered interventions are the most cost-effective.

As career programmes in education have longer-term aims, “not all career guidance is designed to lead to immediate decisions” (OECD 2004, p. 35). However, evaluations of their impact have largely focused upon intermediate effects: on educational motivation, hence academic achievement (OECD 2004). In the United States, “career education programmes have shown some modest but positive effects on various measures of academic attainment” (OECD 2004, p. 35). Finally, the available evidence on long-term outcomes such as success and satisfaction is very limited. In particular, sample sizes in long-term studies “are not easy to sustain, and effect sizes inevitably decline as other factors intervene” (OECD 2004, p. 35). Long-term studies are therefore very costly to set up, and difficult to execute satisfactorily (OECD 2004).

As research so far has not reliably revealed the expected benefits of vocational career guidance at institutional level, the purpose of this study was to investigate the effectiveness of vocational career guidance to enhance student success in Dutch higher vocational education. As further illustrated hereafter, the medium-sized Dutch University of Applied Sciences (UAS) Windesheim served as a case study to explore this effectiveness of vocational career guidance at student and institutional level.

As an introductory Chapter to this thesis, the structure of this Chapter is as follows. The next section further illustrates the context of the study, including the specific circumstances that led to this research project. Subsequently, the rationale of the study is elucidated, followed by the conceptual framework. The core of this framework concerned Tinto's (1993, 2012) interactionist model of student departure which we will elaborate upon, including some critical notes to this model. After the explanation of Tinto's model, this section will elucidate student entry characteristics, student attrition, student success, student motivation and institutional return on investment in vocational career guidance respectively, as other important parts of our conceptual framework. The subsequent sections of this Chapter will present the research questions followed by an outline of the study. This outline discusses our research plan, the adopted research methods and the significance of the study respectively. A thesis overview will close this Chapter, introducing the subsequent Chapters of this thesis.

1. Context of the study

Dutch higher education has a binary system, which means that a distinction is drawn between research-oriented education and higher vocational education (Nuffic 2015). This difference in orientation continued to exist after the introduction of the Bachelor's/Master's degree structure in 2002 (Center for Higher Education Policy Studies 2008). Research-oriented education takes place primarily at research universities, and higher vocational education at universities of applied sciences. "As well as the different objectives, each of the two types of education has its own admission requirements, programme duration and titles" (Nuffic 2015, p. 5). According to the Netherlands Association of Universities of Applied Sciences (Netherlands Association of Universities of Applied Sciences 2015a), the mission of universities of applied sciences is to offer higher vocational education and applied research with a strong orientation towards professional practice. Therefore, every study programme of a UAS is based on a professional profile, established in close cooperation with the employers of the relevant field.

Over recent decades, Dutch UAS's have been involved in institutional merging, concentration, scale enlargement, adoption of the major-minor structure, and several innovations. Although scopes and priorities vary, these innovations have several characteristics in common: integrating theory and practice, motivating students, giving them more responsibility for their own learning, and customising programmes for individual students (Schellekens 2004). To enable students to 'personalise' their study programme, the majority of Dutch UAS's have adopted a new approach to learning, commonly known as demand-driven education (Van AnDEL 2012). Windesheim UAS, the institution where this study was conducted, adopted this approach in 2006 to stimulate students to take more responsibility for their learning process and enable them to customise their programmes (Windesheim University of Applied Sciences 2005a).

Since the early 1990's, Dutch higher vocational education (as well as tertiary education in other OECD countries) has experienced substantial increases in participation. These increases stemmed particularly from the fact that Dutch students are broadly free to enrol in whatever faculty and at whatever university of applied sciences they choose (apart from courses subject to a quota and courses at some particular faculties) (OECD 2004). Between 1995 and 1999 alone, enrolments rates of tertiary education grew by an average of 23% across the OECD (OECD 2001). This tremendous growth of enrolment in OECD countries was also encountered at Windesheim UAS during the last decade (see Table 1).

Table 1. Enrolment of Windesheim UAS taken by level of preliminary education

Cohort	Level of preliminary education				Total
	HAVO	VWO	MBO	Other	
2000	1543	316	783	184	2826
2001	1549	291	803	176	2819
2002	1549	300	772	219	2840
2003	1696	295	982	219	3192
2004	1634	264	1127	264	3289
2005	1876	254	1131	320	3581
2006	1970	263	1271	306	3810
2007	2284	325	1347	296	4252
2008	2740	326	1491	291	4848

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

As Table 1 shows, the growth of total yearly enrolment from 2000 to 2008 exceeds 70 percent. In particular, this growth sets in markedly from the year 2003 and mainly concerns students from higher secondary general education and secondary vocational education, while enrolment at other levels remains relatively constant.

According to the OECD (2004), the increased influx of participants in OECD countries has been accompanied by change and diversification, which have created major challenges for vocational career guidance. As institutions become more differentiated, as the number of institutions and Bachelor programmes to choose from increases, and as Bachelor programmes become more differentiated in content between institutions (OECD 2004, p. 52), so does the need for information and advice increase, to help people decide what and where to study. This calls for a comprehensive approach, which vocational career guidance services in many countries' tertiary education systems are ill-equipped to handle (OECD 2004).

As a medium-sized UAS enrolling 19,908 students in the course 2014/2015, Windesheim UAS in Zwolle is the eleventh largest of thirty-seven universities of applied sciences in the Netherlands (Netherlands Association of Universities of Applied Sciences 2015b). Staffed in 2014 with approximately 2,000 employees, Windesheim UAS offers 68 Bachelor's degree programmes, 5 Master's degree programmes and 15 associate degree programmes which are brought together in ten different faculties.

In 2006, Windesheim UAS set up new educational standards, not only on which to build its required Bachelor-Master structure (Windesheim University of Applied Sciences 2005b), but also to facilitate demand-driven education, in which students direct their own learning process by setting up their personal learning goals. As the Dutch implementation of the Bachelor/Master structure started in 2002 (Center for Higher Education Policy Studies 2008), Windesheim UAS can be characterised as a late adopter: it was one of the last Dutch UAS's to implement this structure in 2006 and simultaneously adopt the concept of demand-driven education (Van Anandel 2012). Based on these new educational standards, the main changes from September 2006 included a stronger 'work-field orientation', a more applicative and multidisciplinary curriculum and a stronger orientation towards practice-based research (Te Wierik et al. 2014). In the view of Windesheim UAS, demand-driven education should enable students to be the designer, director and owner of their learning process and thus manage their own student careers (Windesheim University of Applied Sciences 2005a).

Regarding the arrangement of vocational guidance and student counselling, the emphasis in 2006 turned from supporting students who failed to meet expectations or even threatened to drop out, to guiding all students to design and direct their own learning career and preserving them from dropout. As Windesheim UAS attached great importance to teaching students to manage their own student careers, all students of Windesheim UAS acquired an extra, eleventh competence from 2006 onwards (Windesheim University of Applied Sciences 2005a) that was added to the generic ten core competencies of competence-based Dutch higher vocational education (Commissie Accreditatie Hoger Onderwijs 2001). These ten core competencies concerned, respectively, thorough professionalization, multidisciplinary integration, (scientific) practice, transfer and wide usability, creativity and complexity in acting, problem solving, systematic and reflective thinking and acting, social communication skills, basic management skills and social accountability. As determined by the new educational standards (Windesheim University of Applied Sciences 2005b), students were guided to acquire this eleventh competence called 'vocational career self-management', thus linking the personal learning process to the vocational career guidance process. To acquire this competence, students enrolled annually in a four-credits vocational career guidance course that aimed to provide students with all the necessary skills and attitude to self-manage their student career at Bachelor level. Furthermore, this course enabled students to adopt a more self-regulated approach to learning and at the same time foster their motivation to successfully attend higher education. Prescribed by faculty, the course was offered as a mix of individual, peer group

and class guidance. As a result, both the yearly amount of time spent at class versus individual guidance and the size of the peer group varied from one faculty to another. The main result of this course was the portfolio, in which the student had to prove that they held the eleventh competence. Vocational career guidance at Windesheim UAS was offered by a small professional staff together with a specially assigned faculty, as a comprehensive part of the Bachelor's curriculum that spanned the entire four years of student life from admission to graduation. As provided by teachers who had been allocated time for an extra task in vocational career guidance, teachers were made directly responsible for the supervision and assessment of students. At the end of the first year, assessment of vocational career guidance resulted in a vocational career guidance grade point and a total of four credits when passed (equal for all students). The vocational career guidance course had to be passed, otherwise the student was dismissed by virtue of a so-called binding study advice because of unsatisfactory first-year achievement (taking into account any impeding personal circumstances). In addition to passing the vocational career guidance course, the student had to achieve a minimum number of first-year credits in order to successfully pursue his or her study at the end of the first year. According to the educational standards of Windesheim UAS as implemented in 2006 (Windesheim University of Applied Sciences 2005b), this minimum stood at 45 credits in September 2006.

Finally, Windesheim UAS was determined to link the implementation of vocational career guidance to clear targets with respect to student attrition. More specifically, by introducing vocational career guidance Windesheim UAS aimed at an annual average decline of institutional attrition rates from 2007 of at least 15 percent (Windesheim University of Applied Sciences 2007a).

Considering the introduction of vocational career guidance at Windesheim UAS in September 2006, the first experiences of both students and teachers were mixed. Although, a year after the introduction, all ten faculties of Windesheim UAS indeed offered their students the prescribed amount of guidance and used the various instruments for guidance, first-year students were not always convinced of the effectiveness of vocational career guidance and how it had contributed to their study progress. A satisfaction survey among students of Windesheim UAS in 2007 showed that less than 50 percent of respondents valued the quality of vocational career guidance as adequate. In addition, students would have liked to have had more individual reflection during their first year, particularly with respect to their study progress (Windesheim University of Applied Sciences 2007b). This limited student satisfaction underlined the need to further investigate the effectiveness of

vocational career guidance at Windesheim UAS. Furthermore, existing research so far had not reliably revealed the expected benefits of vocational career guidance in Dutch higher vocational education. To fill this research gap and concurrently clarify the added value of vocational career guidance, this thesis investigated the effectiveness of vocational career guidance to enhance student success in Dutch higher vocational education. The next section further illustrates the motives to conduct this study into vocational career guidance at Windesheim UAS.

2. Rationale of the study

The motives to conduct this study into vocational career guidance at Windesheim UAS were twofold, and concerned educational as well as financial grounds.

Educationally, the question of how to best guide students in Dutch higher vocational education in order to enhance their student success has not yet been fully answered. Despite both national and international investigations of this issue in the past years, the evidence of positive benefits of vocational career guidance so far is sparse and ambivalent. To be discussed in detail as a part of the conceptual framework, international evidence on the benefits of vocational career guidance in general is limited but positive (OECD 2004). However, at national level Kuijpers and Meijers (2008) concluded that career guidance investments barely yield a profit. The Netherlands Association of Universities of Applied Sciences (2009) confirmed this by concluding that the intensity of career guidance in recent years has often been inadequate. In the view of this Association, “expectations with regard to the independent learning abilities of first-year students were high, often too high”. In addition, some students will require more or longer vocational career guidance than others (Netherlands Association of Universities of Applied Sciences 2009).

Furthermore, the aforementioned increased influx of participants in Dutch higher vocational education, which at the same time brought change and diversification, calls for further investigation of the specific roles that growth of enrolment and student entry characteristics (such as gender, age and preliminary education) play in optimising vocational career guidance in Dutch higher vocational education. Therefore, additional research was needed to further educationally clarify the added value of vocational career guidance in Dutch higher vocational education.

Financially, Dutch higher education institutions have allocated substantial resources to advisory and counselling services over the past few years, with a view to guiding individual students along the path of goal clarification. As one of these institutions, Windesheim UAS in 2006 determinedly implemented vocational career guidance in order to guide all students to design and direct their own learning career, preserve them from dropout and enhance their student success. As indicated earlier, institutional benefits of these resources may be seen in increased student retention, thereby maintaining governmental funding per student rather than losing such funding if a student drops out (Herr 2002). Consequently, not only institutional expenditures but also the institutional benefits of vocational career guidance need to be monitored, as public money could be spent in other ways to enhance student retention. Following Maguire (2004, p. 180), there is clearly a need to generate as much evidence as possible of the impact of vocational career guidance, “not least because of the need to support the case for sustaining, and even enhancing, the funding allocated to the activity”.

Therefore, this thesis has not only adopted an educational focus on the effectiveness of vocational career guidance in Dutch higher education, but also a financial focus on this topic in order to clarify both the educational and the financial impact of vocational career guidance in Dutch higher vocational education. The next section will elucidate the conceptual framework involved.

3. Conceptual framework

As indicated above, this thesis focused on the effectiveness of vocational career guidance at Windesheim UAS. This effectiveness was investigated both educationally and financially in four empirical studies, which successively concentrated on the influence of vocational career guidance on student attrition, student success, student motivation, and the costs and benefits of vocational career guidance as an institutional action to enhance retention and graduation in Dutch higher vocational education.

As the core of the conceptual framework of this thesis, this section first discusses Tinto's (1993, 2012) interactionist model of student departure, including some critical notes on this model. Subsequently, this section will clarify student entry characteristics, student attrition, student success, student motivation and institutional return on investment in vocational career guidance respectively, which constitute other important elements of our conceptual framework.

3.1 Tinto's interactionist theory of student departure

As the extent to which students feel they belong to an institution both academically and socially is an important factor for success in higher education (Dutch Education Council 2008), the conceptual framework of this thesis was founded on Tinto's (1993, 2012) interactionist theory of student departure as depicted in Figure 1.

The two central concepts of Tinto's (1993, 2012) theory are social and academic integration, which determine persistence or dropout. Integration is "the extent to which the individual shares the normative attitudes and values of peers and faculty in the institution and abides by the formal and informal structural requirements for membership in that community or subgroups of it." (Pascarella and Terenzini 2005, p. 54). Social integration pertains to the extent of congruency between the individual student and the social system of a university (Hicks and Wood 2016). In other words, students experience social integration if they feel a sense of normative congruence and social affiliation with members of the social communities of a university (Yorke and Longden 2004). Academic integration reflects a student's experience with the academic systems and academic communities of a university. Such experience finds expression in a student's sense of normative congruence and affiliation with these academic systems and communities (Braxton et al. 2000). According to Hicks (2016), Tinto considers academic integration to consist of structural and normative dimensions. "Structural integration entails the meeting of the explicit standards of the university, whereas normative integration pertains to an individual's identification with the beliefs, values and norms inherent in the academic system" (Hicks and Wood 2016, p. 114).

Academic and social integration affect the subsequent commitments of students (Yorke and Longden 2004). Students come to a particular institution with a range of background characteristics (student entry characteristics such as secondary school experiences, academic aptitude, family background). These characteristics influence initial commitments, both to the institution attended and to the goal of graduation from college. Together with entry characteristics, these initial commitments influence not only how well the student will perform in college but also how he or she will interact with, and subsequently become integrated into, the institution's social and academic systems. The higher the degree of integration of the individual into the college system, the greater will be the commitment to the specific institution and to the goal of college completion leading to persistence.

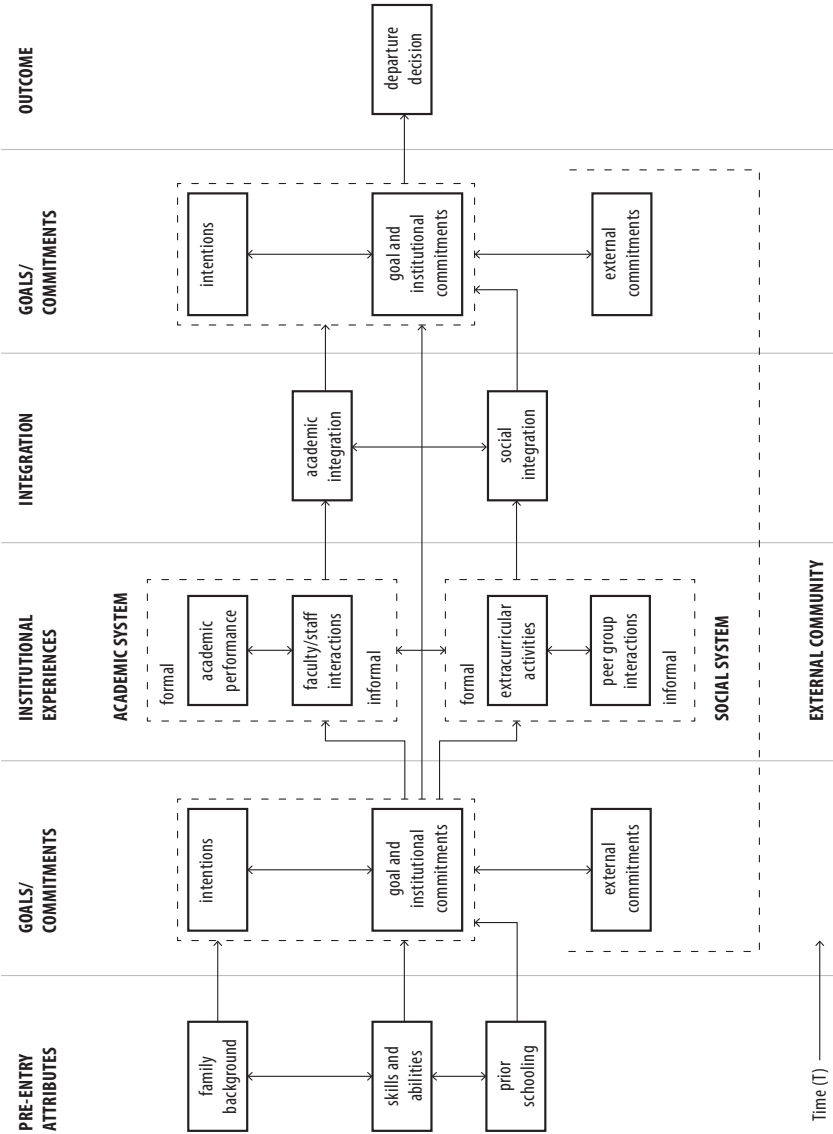


Figure 1. Tinto's model of student departure.
Reprinted from *Leaving college: rethinking the causes and cures of student attrition* (p.114), by V.Tinto, 1993, 2nd ed., Chicago: University of Chicago Press. Copyright 1987, 1993 by the University of Chicago. Reprinted with permission.

As Tinto's (1993, 2012) model is derived from the US (campus) situation of higher education and therefore stresses the impact of both academic and social integration on student persistence, this model's implications for the (non-campus) situation of higher vocational education at Windesheim UAS should be considered carefully. In particular, as students in the Netherlands socialise to a great extent outside the educational institution, social integration is expected to play a considerably different role in student attrition compared to a US (campus) situation. Moreover, Dutch admission and selection policies in higher education differ from US policies. First of all, Dutch students are largely free to enrol at whatever faculty and at whatever university of applied sciences they choose (apart from courses subject to a quota and courses at certain faculties). Also since 1993, Dutch institutions of higher vocational education such as Windesheim UAS have been allowed to dismiss students at the end of their first year by virtue of a so-called binding study advice. Institutions that deploy this dismissal impose a binding study advice on students considered incapable of completing their study programme due to unsatisfactory study progress in their first year, taking into account any impeding personal circumstances. As a consequence, the institution may withdraw a student's enrolment in that particular study programme in which the binding study advice was imposed, consequently obliging the student to leave that study programme.

Concerning vocational career guidance, Tinto (1993) argued that the need to use counselling and advisory programmes during the student career is a consequence of the fact that not all students enter college with clearly set goals. For that reason, institutions have allocated many resources to advisory and counselling programmes with the intention of helping individuals along the path of goal clarification. According to Tinto, these programmes tend to be most effective when advice and counselling are obligatory for students, and when these programmes are systematically linked to other student services and programmes on campus such as a central student advisory centre that serves the advisory and counselling needs of students. Their effectiveness is further enhanced when advisory and counselling programmes are an integral part of the educational process that all students are expected to experience (Tinto 1993, p. 172).

Although Tinto's (1993) model of student departure is most often cited in and associated with student persistence research (Metz 2002), researchers have drawn up some critical notes to this model over recent years. According to Barefoot (2004, p. 11), Tinto's theory has been "the subject of much revision and various debates that revolve around: (a) which element - social integration or academic integration - is more important for what types of students; (b) whether Tinto's model actually

includes all the variables needed to understand student dropout, especially for non-traditional students; or (c) whether today's students should be expected to achieve Tinto's three stages of a successful higher education career - separation, transition, and incorporation". For example, by empirically and conceptually assessing Tinto's theory in 1997, Braxton, Sullivan and Johnson focused on the degree of support for the 13 primary propositions postulated in Tinto's 1975 foundational theory. Empirical tests robustly support only 5 of the primary 13 propositions (Braxton et al. 2000). 4 out of these 5 propositions are logically interconnected (Yorke and Longden 2004) and take the following narrative form. "Students enter college with various characteristics that influence their initial level of commitment to the college or university that they chose to attend. This initial level of institutional commitment also affects their subsequent commitment to the institution. Social integration also affects subsequent institutional commitment. The greater a student's degree of social integration, the greater the student's subsequent commitment to the institution. The greater the degree of a student's subsequent commitment to the institution, the greater the student's likelihood of persisting in college" (Yorke and Longden 2004, pp. 91-92). Empirical support of the other 8 propositions of Tinto's model is low, in particular with respect to the academic integration construct. For example, "only 8 of the 11 multi-institutional studies that attempted to link academic integration and persistence provided support for the relationship. Single institution studies examining the relationship between academic integration and persistence are less clear" (Kuh et al. 2006, p. 12). An important reason for the absence of empirical support for the academic integration construct is that "the model artificially separates student experiences that may be part of one broad social integration construct" (Kuh et al. 2006). In recent years, the social integration construct of Tinto's model has been reconceptualised. Braxton and Hirschy, as reported by Yorke and Longden (2004), proposed a revision of Tinto's theory that particularly focuses on identifying factors that influence student integration into the social communities of universities. By reviewing the findings of 62 studies, using students of traditional age and identifying factors that affect social integration in a statistically significant manner, they indicated three important concepts by which Tinto's (1993) model should be extended. As an antecedent to social integration that shapes student perception of their extent of social integration, these concepts were institutional commitment to the welfare of students, institutional integrity and communal potential respectively (Yorke and Longden 2004). As Yorke and Longden (2004, p. 93) indicate, "institutional commitment to the welfare of students manifests itself in an institution's abiding concern for the growth and development of its students. An institution committed to the welfare of its students clearly communicates that it greatly values students

in groups as well as individuals. Students attending an institution that exhibits such a commitment perceive that they, like administrators, faculty and staff, also have a stake in membership in the communities of the institution". Concerning institutional integrity, Yorke and Longden (2004, p. 94) indicate that "a university exhibits institutional integrity if the actions of its administrators, faculty and staff are congruent with the mission and goals it promulgates. Institutional integrity also entails institutional action that is congruent with such academic values as academic freedom and the principle of merit". Finally, communal potential refers to "the degree to which a student perceives that a subgroup of students exists within the college community with which that student could share similar values, beliefs and goals. Communal potential looms are particularly important for students whose cultures of origin are different from the predominant culture of a given university" (Yorke and Longden 2004, p. 95). Based on these three concepts, Braxton and Hirschy formulated the following three individual theoretical propositions to Tinto's (1993) theory: the greater the level of institutional commitment to the welfare of the student, the greater the level of institutional integrity or the stronger the student's perception of the communal potential on campus respectively, the more likely it is that the student will achieve (higher levels of) social integration (Yorke and Longden 2004). Although the aforementioned criticism has added some relevant remarks to Tinto's (1993, 2012) model, the level of a student's integration into the social and academic systems of the college is still of great value in research on student persistence or dropout. Therefore, the core concept of Tinto's (1993, 2012) interactionist theory of student departure is nevertheless still highly valuable as the basis of empirical research into student success.

3.2 Student entry characteristics

Numerous studies have examined the factors that influence academic success in and dropout from higher education (Bean 1980; Bean and Metzner 1985; Beekhoven 2002; Bijleveld 1993; Bruinsma 2003; Jansen and Bruinsma 2005; Pascarella and Terenzini 1983; Prins 1997; Spady 1970; Tinto 1987, 1993, 2012; Van den Berg and Hofman 2005). The interactive approach (Bean and Metzner 1985; Pascarella and Terenzini 1983; Spady 1970; Tinto 1987) is interpreted as an empirical research stream in which study progress or dropout is explained in terms of the students' individual characteristics and characteristics from their social environment, as well as interaction between the two (Van den Berg and Hofman 2005). In view of this stream, study progress is interpreted as a particular form of the more general term 'student success' (Van den Berg and Hofman 2005, p. 416). Due to the direct focus on explaining student success, instead of considering student success as part of the broader concept of 'social success', Van den Berg and Hofman (2005) consider

the interactive approach as a valuable addition to social theories on study progress. In addition, Bean and Eaton (2000) contended that personality traits such as self-efficacy help a student persevere when faced with academic and social challenges (Kuh et al. 2006). Furthermore, Tinto (2000) emphasised that theoretical models should also encompass classroom, faculty and pedagogy in the discussions of student persistence. In the Netherlands, several recent studies have investigated the relationship between a number of student-based and contextual variables and student success (Zeegers 2004). Bijleveld (1993) and Jansen (1996) focused their research on curriculum effects on student success. Bijleveld (1993) specified a conceptual model that aimed at explaining differences in dropout between departments. As Bruinsma (2003) indicated, Bijleveld's model (not empirically tested) focused on the effects of departmental characteristics such as the amount of problem-based learning, the number of interactive teaching methods, spread of the study load and the spread of tests. These effects of departmental factors were mediated by student entry characteristics determined by demands of the department and by self-selection (Bruinsma 2003). Instead of dropout, Jansen (1996) investigated the academic achievement of students. In her conceptual model as explained by Bruinsma (2003), both student characteristics and curricular characteristics affected the students' effort, which was determined by time and motivational aspects. Furthermore, both effort and student characteristics determined the level of academic achievement (Bruinsma 2003). The model, which was empirically tested, "included the student characteristics gender, age and ability and the curricular characteristics as explanatory factors. Numerical returns after one and two years and attainment in terms of total credits obtained in the first year were included as outcome variables. This study showed that female students, younger students and students with a higher ability had a higher achievement. In addition, achievement was influenced by measures that affected the student planning behaviour and encouraged a positive attitude to the study. For instance, scheduling fewer subjects simultaneously, scheduling the regular assessments more evenly and scheduling resits less spread over the curriculum resulted in a higher achievement" (Bruinsma 2003, p. 10).

Finally, Van den Berg and Hofman (2005) investigated factors at student level, course/institute level and government level that determine study progress and numerical success rate in higher university education. Their results showed the relative importance of student level and institutional factors on study progress. More specifically, their research indicated that "95% of the total variance in study progress is due to student factors, where 5% of the total variance is due to course factors" (Van den Berg and Hofman 2005, p. 436). At student level, "no differences

were found in study progress between students with university-educated parents and students with less educated parents” (Van den Berg and Hofman 2005, p. 437). In addition, they concluded that “paid jobs alongside the study do not harm study progress, provided that the job only requires a moderate time investment of about one day per week. Master’s phase students who spent between 8 and 12 hours per week in paid jobs obtained only slightly fewer course credits than students who did not perform paid jobs, whereas study progress was significantly reduced if students spent more than 12 hours per week in paid work”. At course level, students tended to show less study progress in curricula that offered more subjects in the same study period. Furthermore, the number of study periods per academic year tended to be negatively associated with study progress within the master’s phase student group (Van den Berg and Hofman 2005, p. 438).

This thesis particularly considered student entry characteristics of gender, age and preliminary education as important predictors of student success. Gender is proven to be an important predictor of student success, as male students are less successful in Dutch higher vocational education than female students (Jansen 1996; Kusurkar et al. 2013; Netherlands Institute for Social Research 2016). Regarding age, Eppler and Harju (1997) examined the relationship between achievement motivation and academic performance of 262 undergraduate students. Results showed that older students (who had taken a year or more away from college before continuing their studies) are more intrinsically motivated to acquire knowledge and develop competence in skills, while freshmen are more externally oriented toward forming social relationships, receiving external rewards and living up to others’ expectations (Eppler and Harju 1997). In addition, Fazey and Fazey (2001) investigated the extent to which first-year undergraduates, on arrival at university, displayed autonomy-related characteristics, and how these characteristics varied according to age. Whilst mature students scored higher than younger students on all the subcomponents of intrinsic motivation, younger students scored significantly higher on identified regulation (which, according to Deci et al. (1991) differs from intrinsic motivation only in that the action is not initiated by the individual) and on external regulation (Fazey and Fazey 2001). Moreover, Kusurkar et al. (2010) showed that strength of motivation increases with age, between the ages of 18 to 24 years. After the age of about 24 years the strength of motivation is more or less constant (Kusurkar et al. 2010, p. 310). To sum up, age considerably influences first-year student motivation in higher education. In comparison, mature students display a higher level of intrinsic motivation that is more or less constant, while younger students show a higher level of identified and external regulation that increases up to the age of 24 years. Finally, preliminary education is also considered to be

an important predictor of student success. As attrition rates of first-year students from secondary vocational education in the Netherlands are considerably higher than those of students from higher general secondary education and pre-university education (Netherlands Association of Universities of Applied Sciences 2009), the level of preliminary education of new entrants determines to a considerable extent the probability that students in higher vocational education will complete their studies successfully. In recent years, it has become clear that many students have considerable deficiencies (Netherlands Association of Universities of Applied Sciences 2009, p. 14). Universities of applied sciences therefore “offer additional tuition on a large scale, sometimes in the first year and sometimes to pupils in their final year of secondary education, in close cooperation with the secondary education institution”. According to the Netherlands Association of Universities of Applied Sciences, the importance of this cannot be overestimated (Netherlands Association of Universities of Applied Sciences 2009). Recently, important steps were taken as the Dutch government set out reference levels for language proficiency and arithmetic for the various types of education. Furthermore, institutions underscore their role as more of them carry out diagnostic tests. As indicated by the Netherlands Association of Universities of Applied Sciences (2009, p. 14), Dutch universities of applied sciences assume that this will result in a gradual reduction in deficiencies, although the actual effects of government policy will only become visible after several years. For this reason, “Dutch universities of applied sciences will continue to invest in providing additional tuition”. Finally, the Netherlands Association of Universities of Applied Sciences points out a so-called *trilemma* as an urgent challenge facing universities of applied sciences, in the sense that not only should the level of the Bachelor’s programmes be upgraded, but at the same time the level of preliminary education of new entrants is under pressure and completion rates must be improved (Netherlands Association of Universities of Applied Sciences 2009).

3.3 Student attrition

Students leave college for a mix of individual and institutional reasons: change of major, lack of money, family demands and poor psycho-social fit, among others. More recent theoretical formulations of student persistence underscore the critical role played by institutional characteristics and context in influencing student persistence (Kuh et al. 2008). For example, the first year of study can be characterised as a year in which students have to make a transition from the (more protected) secondary school context to the (more open) context of college. As part of this transition, the first six months of college are an especially important period in student persistence. Therefore, completing the first year is more than half way

to persistence for the Bachelor's degree (Tinto 1988). Students who do not succeed in their first year have far less chance of completing a Bachelor's degree on time (Seidman 2005).

In exploring student attrition, an important distinction must be drawn between institutional and system attrition, as the former refers to the attrition of persons from individual institutions of higher education whereas the latter refers to attrition from the wider higher educational system. Institutional attrition often results in the migration of persons to other institutions. From an institution's point of view, a student who transfers to another institution is a non-completer. Yet the student may well progress to a degree with no loss of time: viewed from the perspective of the higher education system as a whole, it would be inappropriate to count such a student as a non-completer (Yorke 1999).

3.4 Student success

Student success can be elementary when understood as getting students into and through college to a degree or certificate (Ewell and Wellman 2007). There are many different aspects of student success, ranging from *student flow* across the entire educational chain (high school graduation, college enrolment, retention, and degree completion), to the *quality and content* of learning, to *outcome variables* such as skills achieved as a result of going to college, to positive *educational experiences* (such as student engagement, satisfaction or post-college performance). A broad definition of student success is given by Kuh et al. (2006), who defined student success as academic achievement, engagement in educationally purposeful activities, satisfaction, acquisition of desired knowledge, skills and competencies, persistence, attainment of educational objectives, and post-college performance. Each of these dimensions has implications for the way in which student success could be measured and for strategies to change behaviour to improve performance. As such, student success is a complex construct which can be measured by quantifiable 'hard outcomes' such as retention and completion, and gauged by 'soft outcomes' such as student engagement and distance travelled by learners towards their personal and programme goals (Zepke et al. 2010).

Considering student success, evaluating vocational career guidance properly is very complex (Maguire and Killeen 2003). First, the potential effects of vocational career guidance manifest at three potential stages (OECD 2004, p. 33): immediate attitudinal changes and increased knowledge; intermediate behavioural changes, for example through improved search efficiency and persistence or entering a particular course; and longer-term outcomes such as success and

satisfaction. Second, outcomes of vocational career guidance, both intentional and unintentional, behavioural and attitudinal, short- and long-term, can vary widely. According to the OECD (2004), “obtaining clear answers about impacts under these circumstances requires large-scale research with complex experimental designs and statistical controls”. Since such research is known to be lengthy and expensive, limited studies have been conducted to date. Third, studies of behavioural outcomes require a follow-up design, which raises a number of difficulties (OECD 2004). Not only may the effects not be visible for some time, but also the longer the time that elapses, the more other factors come into play. As indicated by the OECD (2004, p. 35), “studies with control groups are particularly difficult to sustain over extended periods: contact cannot be indefinitely extended, nor guidance indefinitely denied”.

Since learning outcomes are immediate and also relatively easy and cheap to measure, most of the existing evaluation evidence on vocational career guidance relates to learning outcomes (OECD 2004, p. 34). A review by Killeen and Kidd (1991) of 40 (mainly United States) studies as reported by the OECD (2004) divided the learning outcomes from vocational career guidance into six main categories:

- precursors: attitudinal factors which facilitate rational decision-making such as reduced decision-anxiety;
- self-awareness: learning about self;
- opportunity-awareness: learning about opportunities and options;
- decision-making skills: learning rational decision-making skills and strategies;
- transition skills: learning skills for implementing decisions (including job-search skills and interview skills);
- certainty of decision.

As indicated by the OECD (2004), “out of the 40 studies, only four reported no gains in the categories identified, 30 reported wholly positive results, and gains were reported in each category more often than null results. Also, positive results were reported for each main type of guidance intervention: classes and courses, workshops and groups, individual guidance, test interpretation and feedback, experience-based interventions, and multi-method interventions” (OECD 2004). Similar conclusions have been found in a more extensive meta-analysis of Whiston et al. (1998) as reported by the OECD (2004). This analysis concluded that (OECD 2004, p. 34):

- career interventions are effective with most age-groups;
- individual guidance has the biggest effect, followed by group counselling and classroom interventions;
- counsellor-free interventions have the smallest effect sizes;
- computer-delivered interventions are the most cost-effective.

To sum up, international evidence on the benefits of vocational career guidance in general is limited but positive (OECD 2004). “Evidence for its positive impact upon short-term learning, motivational and attitudinal outcomes can be treated with a high degree of confidence, and in the case of its impact upon actual behaviour with moderate confidence. However evidence on its impact upon long-term individual outcomes, and hence upon economic outcomes, is very limited” (OECD 2004, p. 36).

3.5 Student motivation

Motivational variables play a key role in predicting success in college (Harackiewicz et al. 2002). Over the years motivational theorists have offered various perspectives on motivation, which have led to different operationalisations of this construct (Ning and Downing 2011). One long-standing perspective on motivation is expectancy-value theory (Wigfield and Eccles 2000). Following this theory, motivation is defined as the tendency to undertake an activity when (a) the intended result is valued positively and (b) there is a good chance that the result can be achieved (Beishuizen and Asscher 2001). In view of this theory, people start a task when they value this task as important, interesting or useful (positive value of the result), and when they are hopeful that they can fulfil this task successfully (positive expectancy for success) (Rotter 1954). The value of the result is determined by:

1. interest in achieving the result. Interest can be aroused by curiosity (intrinsic motivation) or by expected positive results of completing the task successfully (extrinsic motivation). Interest raises the state of internal activity (arousal, tension). Course material is more interesting when the student already knows a lot about the subject matter involved. In general, practical course material is more interesting than abstract course material. Interest can be aroused by including episodic information (personal adventures, anecdotes) in the course material or by including original, illogical, contradictory or paradoxical propositions in this material.
2. relevance of the result. Students have to realise that the learning outcome is of personal value to them, and is important and useful. Upon gaining this insight, learning becomes purposeful behaviour that is directed at change and the student's personal growth.

The student's expectation of success is determined by the student's self-confidence. In particular, the student's feeling that he or she is able to perform as required provides the student with a sense of control (Beishuizen and Asscher 2001). This feeling is determined by the student's attributional style as the way the student attributes success and failure to internal and external causes. Providing students with insight into their attributional style can influence student motivation positively. When pursuing a certain result, a student should therefore obtain a positive expectation of it, and realise that he or she has achieved this result him- or herself. In this way, a positive expectation of success may actually lead to success, resulting in the so-called "Pygmalion effect" (Rosenthal and Jacobson 1968).

Atkinson (1974) predicted that an experimental subject with high motivation to achieve success will put most effort into a task of average difficulty, with a 50 percent chance of success. His reasoning was that a task with a great chance of success has small intrinsic value, while less effort will put into a task with a small chance of success, even if there is a great chance of success. The experimental subject with high motivation to fail will show the opposite reaction. His fear will be highest at a 50 percent chance of success, causing him to avoid fairly difficult tasks and particularly select very easy or very difficult tasks. Atkinson (1974) tested his prediction in an experiment in which male students were playing quoits. The students were free to choose the distance (between land 15 feet) from which to throw the quoits. The middle distance was hypothesised as being the most preferred distance, in particular most preferred by students with high achievement motivation and a low level of fear. The expected order was: high achievement motivation and low level of fear, high achievement motivation and high level of fear, low achievement motivation and low level of fear, and finally low achievement motivation and high level of fear. The experiment's success depended on proper measurements of both achievement motivation and fear of failure, and was based on the assumption that playing quoits activates achievement motivation. The results of the experiment supported the assumptions of Atkinson.

Regarding learning, two distinguished kinds of goal orientation are (a) learning- or task-orientation and (b) performance- or ego-orientation (Boekaerts and Simons 1995). Learning-oriented students consider learning as a goal in itself. Performance-oriented students wish to demonstrate their ability and preferably receive favourable judgements from others. When asking students about the goal they are pursuing, various answers will be given. Students may for instance study because of interesting course material, to acquire a job in line with the study, or to prove oneself. Goals highly determine the effort that is put into learning.

Learning-orientated students generally hold a positive view of their own skills and a dynamic view of knowledge and intelligence. They assume that knowledge and skills can be acquired by one's effort and that intelligence is a non-permanent talent (Dweck and Leggett 1988). In the view of these students, learning enhances competencies. Learning-oriented students are intrinsically motivated; they learn because they are inquisitive. They generally select challenging learning assignments and prefer deeper learning. Their attributional style is marked out as highly steerable (Boekaerts and Simons 1995).

Performance-orientated students consider that knowledge and aptitude to learn (intelligence) are stable and unchangeable (Dweck and Leggett 1988). Following Pintrich (2000a), an important distinction with respect to performance orientation has to be made between approach performance goals and avoidance performance goals. "Students who are focused on approach performance goals are oriented to doing better than others and to demonstrating their ability and competence, in other words, approaching tasks in terms of trying to outperform others. In contrast, under an avoidance performance orientation, students are attempting to avoid looking stupid or incompetent, which leads them to avoid the task" (Pintrich 2000a, p. 544). If students visualise their own skills negatively, they perceive learning as an ongoing struggle to prevent personal failure in the view of others. Therefore, their motivation to learn mainly serves to demonstrate how well they perform and to cover mistakes. They feel happy when others appreciate them, which subsequently raises their status. They generally select assignments that offer them the opportunity to demonstrate how well they perform. If possible, they perform very poorly (a good grade without much effort is rated higher than a good grade that required a great deal of effort). They handle learning assignments by absorbing the offered course material as well as possible, without establishing new relationships between concepts or linking concepts to concrete experiences. Their attributional style is marked out as not particularly steerable (Boekaerts and Simons 1995).

A final perspective on motivation to be discussed here is the concept of self-regulated learning. Following Pintrich (2000b, p. 453), self-regulated learning, or self-regulation, is "an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behaviour, guided and constrained by their goals and the contextual features in the environment". As Zusho et al. (2003, p. 1083) indicated in their general model of motivation and self-regulated learning, "certain personal characteristics such as age, gender, ethnicity, and prior knowledge, along

with classroom contextual factors, help to shape how an individual approaches, engages, and responds to an achievement task, which in turn influences students' level of cognitive processing and, ultimately, outcomes such as choice, effort, persistence, and academic achievement". In terms of motivational processes, Zusho et al. (2003) distinguish four motivational components in their model. The first is self-efficacy, defined by Zusho et al. (2003) as "students' judgments of their capabilities to perform a task, as well as their beliefs about their agency in the course". Generally, researchers have shown that it is more adaptive to have higher beliefs of efficacy. According to Zusho et al. (2003), "Students who believe that they are capable of adequately completing a task and have more confidence in their ability to do so typically display the highest levels of academic achievement, and also engage in academic behaviours that promote learning (Bandura 1997; Schunk 1991)". The second motivational component is task value beliefs, or students' beliefs about the utility and importance of a course (Zusho et al. 2003). As indicated in our earlier discussion of the expectancy-value theory, it is believed that having higher task value beliefs is favourable; typically, researchers have demonstrated positive relations of task value beliefs to deeper levels of cognitive processing and performance (Pintrich 1999). Goal orientation represents the third motivational component in the model of Zusho et al. (2003). As explained earlier, goal orientation can be briefly defined as individuals' purposes when approaching, engaging in, and responding to achievement situations. In particular, "goal theorists commonly identify two primary achievement goals – mastery and performance goals – as being important determinants of students' motivation and performance (Zusho et al. 2003, p. 1083). Endorsement of a mastery goal, or the goal to develop competence and task mastery, has been found to be positively related to various learning and motivational indices. In contrast, adoption of a performance goal, or the goal to validate one's competence in relation to others, is generally thought to have a negative effect on students' achievement motivation and academic performance (Dweck and Leggett 1988)". The last motivational component in the model of Zusho et al. (2003) is affect, defined in terms of interest and anxiety. Interest, defined as personal interest in course material or general liking of subject matter, has been linked with deeper cognitive processing as well as higher levels of achievement (Pintrich 1999). Anxiety, or general worry and negative emotions about doing well in class, has been found to have negative consequences on cognition and performance (Zeidner 1995).

As regards to first-year student motivation, difficulties in the transition from secondary school to university have been of great concern to researchers internationally. As Tinto (2010) argued, the expectations established by the

institution for the quality or level of effort required for successful performance highly influence first-year student motivation and performance. As data from the US National Survey of Student Engagement indicate, student expectations of the amount of work or effort they have to invest in order to succeed tend to decline over the course of the first year. Consequently, students appear to expend less effort in their studies than the faculty might expect or desire, especially during the critical first year of college (Tinto 2010). As the German scientist Busse (2011) concluded, one of the consequences of this transition is the significant decrease in intrinsic motivation experienced by students over the course of the first year. Drawing on incidental evidence indicating motivational loss among first-year students of modern foreign languages at two major English universities, different motivational attributes of first-year students studying German as a foreign language were measured, including students' perceived level of intrinsic motivation and perceived level of effort expended on German. Student motivation waned most in the middle stages of the academic year and somewhat recovered towards the end of the year (Busse 2011). During the course of the academic year, lack of engagement was a recurrent topic, especially within the university curriculum. One reason for this loss of engagement was that the perceived level of challenge that students were exposed to at university was inappropriate. Furthermore, first-year students might at first not be aware that they can adjust this level of challenge posed by university classes (Busse 2011).

Concerning vocational career guidance, different potential effects of vocational career guidance to foster student motivation can be considered. As Conti (2000) argues, the provision of appealing course offerings, inspiring tutors, exciting social and extracurricular activities, comfortable living arrangements, and emotional support for students could facilitate the intrinsic motivation and adjustment of new students (Conti 2000). Furthermore, Haarala-Muhonen et al. (2011) investigated factors affecting the study pace of law students during their first academic year and concluded that novices need study counselling to interpret disciplinary knowledge and clarify course requirements for them (Haarala-Muhonen et al. 2011).

3.6 Institutional return on investment in vocational career guidance

Considering institutional return on investment in vocational career guidance, vocational career guidance can play a valuable economic role in providing individuals with better information on available career opportunities and their aptitude to successfully and speedily pursue them in higher education, given their existing skills and abilities. According to Mayston (2002a, 2002b), it can help to add value to the individual's human capital beyond what it would have been without

vocational career guidance. The OECD (2004) confirmed this valuable economic role of vocational career guidance by arguing that the potential benefits of vocational career guidance at micro-level could result from people being better able to manage their choices of learning and work, thereby maximising their potential. In addition to micro-level, potential benefits of vocational career guidance are likely to be generated at meso- and macro-level as well. At macro-level, benefits could result from securing jobs for individuals rather than being unemployed, or securing a better paid job rather than a low paid job, thus increasing tax yields and saving unemployment and other social security payments, all in favour of the Exchequer. At the meso-level to which this study is dedicated, vocational career guidance could fulfil the needs and aspirations of students (OECD 2004) in particular by improving the experience and retention of first year students and by increasing their graduation rate (Dutch Education Council 2008).

At this meso-level, institutions have allocated substantial resources to advisory and counselling services that intend to guide individual students along the path of goal clarification. According to Herr (2002), the institutional benefits of these services may be seen in increased student retention, thus maintaining the governmental funding per student rather than losing such funding if a student drops out. Consequently, not only institutional expenditures but also the institutional benefits of vocational career guidance need to be monitored, as public money could be spent in other ways 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, not least because of the need to support the case for sustaining, and even enhancing, the funding allocated to the activity.

4. Research questions

As indicated earlier, this study concentrated on the effectiveness of vocational career guidance at Windesheim UAS with respect to reducing student attrition, and enhancing student success and student motivation, while considering the balance between increased expenditures and potential benefits of vocational career guidance. This effectiveness was investigated both educationally and financially in four empirical studies, which successively concentrated on the influence of vocational career guidance on student attrition, student success, student motivation and the potential benefits of vocational career guidance at Windesheim UAS. In particular, this study addressed the following research questions (in corresponding order of the four empirical studies):

1. Does vocational career guidance push back *first-year attrition rates* of Windesheim UAS? And how can the influence of vocational career guidance on *first-year student attrition* of Windesheim UAS be explained, given other known influences on *student attrition* such as growth of enrolment, binding study advice, gender, preliminary education and the switching behaviour of students?
2. Does vocational career guidance significantly affect *first-year student success*, given other known influences such as prior academic performance, faculty and gender? And if so, in what way does vocational career guidance affect *student success*?
3. Does *first-year student motivation* benefit from vocational career guidance, given other known influences of gender, age, preliminary education and initial student motivation? And do differences in vocational career guidance scenarios influence *first-year student motivation*?
4. To what extent should student dropout of Windesheim UAS be reduced in order to receive an *institutional return on investment* of vocational career guidance?

As approximately three-quarters of all dropouts leave at some time before or at the end of the first year (Elkins et al. 2000), all four empirical studies focused on first-year students in particular. The next section describes the outline and methodology of the study in further detail.

5. Outline and methodology of the study

This study particularly investigated the effectiveness of vocational career guidance of Windesheim UAS, at student and institutional level. Following the OECD (2004), potential benefits of vocational career guidance at these levels could result from students being better able to manage their choices of learning and work. In addition, vocational career guidance could fulfil the needs and aspirations of students, in particular by improving the experience and retention of first year students and by increasing their graduation rate. Following Whiston et al. (1998) as reported by the OECD (2004), vocational career guidance in general could be classified as a classroom intervention with relatively low empirical impact on learning outcomes. However, vocational career guidance at Windesheim UAS was a closely interwoven part of the Bachelor's curriculum that spanned all four years of student life from admissions to graduation. As explained earlier, students at Windesheim UAS were guided to acquire an eleventh competence called 'vocational career self-management'. This course aimed to provide students with all the necessary skills and attitude to self-manage their Bachelor's student career. Based

on existing literature on the benefits of vocational career guidance as reported above, we therefore expected vocational career guidance at Windesheim UAS to play a valuable educational and economic role in providing students with better information on available career opportunities and their aptitude to successfully and speedily pursue them in higher vocational education at Windesheim UAS. To answer the research questions presented above, this study was subdivided into four separate empirical studies. The next section presents our research plan.

5.1 Research plan

Following Tinto's (1993, 2012) interactionist theory of student departure, the research plan of this thesis is depicted in Figure 2. The Roman numerals in this Figure correspond to the four empirical studies embedded in this thesis.

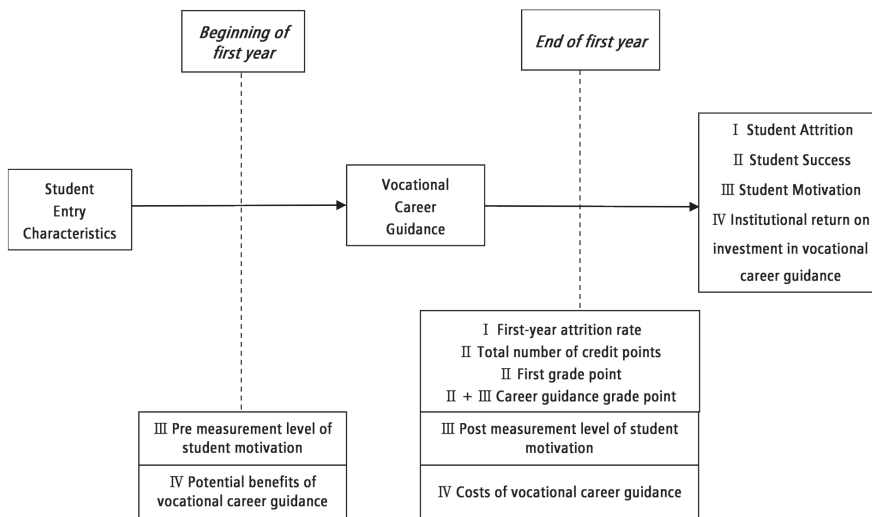


Figure 2: Research plan based on Tinto's (1993; 2012) model of student departure

(Source: Adapted from Yorke and Longden, 2004, p. 90)

As Figure 2 indicates, students come to a particular institution with a range of student entry characteristics such as gender, age, preliminary education, family background and academic aptitude. As the impact of these characteristics on student success differs among students during their student career (Eppler and Harju 1997; Fazey and Fazey 2001; Kusurkar et al. 2013), these characteristics

were important variables to include in the investigation of first-year student success. From the beginning of their first year, all students at Windesheim UAS were vocationally guided to design and direct their own learning career, thereby preserving them from dropout. Investigating this guidance at Windesheim UAS, vocational career guidance therefore constitutes the core of the research plan. Questioning the educational as well as financial effectiveness of vocational career guidance at Windesheim UAS, this plan incorporates four empirical studies, the first three of which had an educational focus, and the fourth had a financial focus. The first empirical study investigated the influence of vocational career guidance on student attrition, concentrating on first-year attrition rates of cohorts from 2000 to 2008 at Windesheim UAS. The second empirical study investigated the influence of vocational career guidance on first-year student success, concentrating on the total number of credits that students obtained at the end of the first year of study which represented progress towards completion. Furthermore, this study focused on both the first grade point and the vocational career guidance grade point as important predictors of student success that so far have rarely been included in relevant Dutch higher educational research. The third empirical study investigated the influence of vocational career guidance on first-year student motivation, concentrating on the level of student motivation at the beginning and end of the first year of study. The fourth and final empirical study investigated the institutional return on investment in vocational career guidance, while focusing on the costs and potential benefits of vocational career guidance as an institutional action to enhance retention and graduation in Dutch higher vocational education. The next sections will elaborate upon the four empirical studies depicted in Figure 2.

The first empirical study investigated the effectiveness of vocational career guidance in terms of pushing back attrition rates, elaborating upon Tinto's (1993, 2012) model of student attrition. As this study particularly investigated student attrition from Windesheim UAS, this study focused on institutional attrition. In particular, this study aimed to answer the following research questions: Does vocational career guidance push back first-year attrition rates at Windesheim UAS? And how can the influence of vocational career guidance on first-year student attrition at Windesheim UAS be explained, given other known influences on student attrition such as growth of enrolment, binding study advice, gender, preliminary education and the switching behaviour of students? Obtained from the student administration offices, our data contained individual records from the entire population of full-time students of nine entry cohorts between 2000 (academic year 2000/01) and 2008 (academic year 2008/09). In the first step of this quantitative study, the broad trend in first-year student attrition of the cohorts 2000 to 2008 was investigated.

Differences between cohorts were analysed using logistic regression, in which attrition was regressed on cohort as a dummy variable. In the second step, the influence of vocational career guidance and other known influences of student attrition (i.e. age, cohort, faculty, gender, growth of enrolment and preliminary education) was investigated by using logistic regression. In the third and final step, possible disturbing influences of other known predictors of student attrition (i.e. binding study advice and the switching behaviour of students) were investigated using time-series analysis in SPSS.

The second empirical study investigated vocational career guidance in terms of enhancing student success, elaborating upon Tinto's (1993) model of student attrition. This study investigated student academic achievement in the first year first and foremost, as this is the year in which success rates in Dutch higher education are traditionally low and attrition rates high (Dutch Education Council 2008). Furthermore, completing the first year is more than half the battle in terms of persistence to the Bachelor's degree (Tinto 1988). In particular, this study aimed to answer the following research questions: Does vocational career guidance significantly affect first-year student success, given other known influences such as prior academic performance, faculty and gender? And if so, in what way does vocational career guidance affect student success? Obtained from the student administration offices, the first part of this study was based on a data set containing individual records of full-time first-year students of entry cohort 2008 (course 2008/09). Adopting a quantifiable focus on student success, dependent variable student success was measured by the total number of credit points that students obtained in their first year, which represent progress towards completion. The influence of vocational career guidance on student success was examined by regressing student success on both the first grade point and vocational career guidance grade point in course 2008/09, as well as on student characteristics of gender, age and preliminary education. The second part of this study was a cohort analysis, based on individual records including the same individual student entry characteristics compared to the first part of this study. As the two year period before and after vocational career guidance was implemented, the included cohorts were 2004, 2005, 2007 and 2008. At these cohort levels, we first analysed the average number of total credits that students obtained at the end of their first year. As this average number of total credits turned out to increase significantly after vocational career guidance was introduced in 2006, we extended our analysis to faculty level by analysing the same number of credits for the individual faculties involved. To exclude alternative explanations, this study controlled for possible disturbing influences of other known predictors of student success.

Subsequently, the third empirical study focused on the motives that enhance first-year student success. As vocational career guidance at Windesheim UAS enabled students to assume a more self-regulated approach to learning and at the same time foster their motivation to successfully attend higher education, this study investigated the influence of vocational career guidance on extrinsic motivation, intrinsic motivation, achievement motivation and self-efficacy. Following the aforementioned findings of Busse (2011), this study expected a decrease in intrinsic motivation experienced by students over the course of the first year. In particular, this study investigated the influence of vocational career guidance of Windesheim UAS on first-year student motivation, taking into account the specific role played by the transition from secondary school to university with respect to first-year student motivation. Furthermore, student background variables of gender, age and preliminary education were taken into account, as these variables proved to have a considerable impact on the motivation of first-year students in higher education also. This study aimed to answer the following research questions: Does first-year student motivation benefit from vocational career guidance, given other known influences of gender, age, preliminary education and initial student motivation? And do differences in vocational career guidance scenarios influence first-year student motivation? This study adopted a quantitative approach to determine the influence of vocational career guidance on first-year student motivation at Windesheim UAS. Based on a series of questionnaires on competencies, skills, motivation, learning style and choice of future profession that all first-year students at Windesheim UAS had to complete, data were collected at the beginning (pre-measurement) and end (post-measurement) of the first year, and were analysed in three steps. In the first step, the composition of the pre-measurement data was analysed by using descriptive statistics. In the second step, the pre- and post-measurement data were compared by using multilevel descriptive statistics to trace any possible faculty differences in the development of first-year student motivation. In the third and final step, the influence of vocational career guidance on first-year student motivation was investigated by using multilevel regression analyses in SPSS.

Finally, the fourth empirical study concentrated on the institutional return on investment in vocational career guidance, as an institutional action to enhance retention and graduation in Dutch higher vocational education. In particular, this study aimed to answer the following research question: To what extent should student dropout at Windesheim UAS be reduced in order to receive an institutional return on investment in vocational career guidance? To answer this question, we constructed a model that confronted the total costs of vocational career guidance

with its potential benefits. In particular, this model was based on a cost-benefit analysis of vocational career guidance at Windesheim UAS, which compared the actual costs and potential benefits of vocational career guidance. By virtue of the funding model of Dutch higher vocational education that was valid during the years when 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 comprised funds for labour, material and housing expenses, institutions were free to allocate this lump sum. As regards the actual costs of vocational career guidance, four expense categories were particularly important to assess the institutional return on investment in vocational career guidance. First, start-up costs were incurred in order to develop vocational career guidance courses. Second, labour costs were incurred to pay the teachers providing vocational career guidance courses. Third, pre-measurement costs were incurred to collect data on competencies, skills, motivation, learning style and choice of future profession at the beginning of the first year, as a starting point of vocational career guidance at student level. Fourth, training and certification costs were made to professionalise and certify vocational career guidance teachers and thus enhance and monitor vocational career guidance quality. To sum up, the fourth empirical study distinguished start-up costs, labour costs, pre-measurement costs and certification costs as costs of vocational career guidance. Concerning these costs, one relevant distinction is between fixed and variable costs. For instance, the start-up costs at institutional level were necessary fixed costs in order to develop the vocational career guidance courses. In contrast, pre-measurement costs were mainly variable costs, depending on the number of first-year students from whom the data were collected. As the actual benefits of vocational career guidance could not be reliably investigated due to other contributory factors, this fourth study concentrated on potential rather than actual benefits of vocational career guidance. These potential benefits were calculated by using the aforementioned funding model of Dutch higher vocational education, which allocated public funds to Universities of Applied Sciences partly on the basis of the number of students that completed and dropped out of college. More specifically, a course duration of 1.35 years was funded by virtue of this model in the case of a student dropping out. Likewise, a course duration of 4.5 years was funded in the case of a graduating student. Expecting vocational career guidance to result in an increased number of students graduating instead of dropping out of college, public funding at Windesheim UAS consequently increased as the graduates were funded for an extra 3.15 years (calculated as the difference between funding periods of 4.5 and 1.35 years in the case of graduation and dropout respectively) compared to dropouts. Confronting total costs of vocational career guidance with its total potential

benefits, the fourth empirical study assessed the break-even point of vocational career guidance in order to conclude whether vocational career guidance at Windesheim UAS could be a good investment to reduce student dropout.

5.2 Methods

The first empirical study concerned a quantitative study, the first step of which investigated the broad trend in first-year student attrition of the cohorts 2000 to 2008. In the second step, the influence of vocational career guidance and other known influences of student attrition (i.e. age, cohort, faculty, gender, growth of enrolment and preliminary education) was investigated by using logistic regression. In the third and final step, possible disturbing influences of other known predictors of student attrition (i.e. binding study advice and the switching behaviour of students) were investigated by using time-series analysis in SPSS.

The second empirical study concerned a quantitative study also, the first part of which examined the influence of vocational career guidance on student success by investigating both the assessment and distribution of vocational career guidance grade points. The second part of this study was a cohort analysis of the average number of total credits that students obtained at the end of their first year. To exclude alternative explanations, this study controlled for possible disturbing influences of other known predictors of student success.

In the third study, a quantitative approach was used to determine the influence of vocational career guidance on first-year student motivation at Windesheim UAS. Based on a series of questionnaires on competencies, skills, motivation, learning style and choice of future profession which all first-year students at Windesheim UAS had to complete, data were collected at the beginning (pre-measurement) and end (post-measurement) of the first year, and analysed in three steps. In the first step, the composition of the pre-measurement data was analysed by using descriptive statistics on age. In the second step, the pre- and post-measurement data were compared by using multilevel descriptive statistics to trace any possible faculty differences in the development of first-year student motivation. In the third and final step, the influence of vocational career guidance on first-year student motivation was investigated by using multilevel regression analyses in SPSS.

The fourth and final study aimed to construct a model to evaluate to what extent student dropout should be reduced in order to receive an institutional return on investment in vocational career guidance. This model was based on a quantitative break-even analysis that confronted the total costs of vocational career guidance

with its potential benefits. The breakdown of vocational career guidance costs comprised start-up costs, labour costs, pre-measurement costs and certification costs. The potential benefits of vocational career guidance were calculated by using the Dutch funding model, which allocates public funds to Universities of Applied Sciences partly on the basis of the number of students who complete and drop out of college. By comparing the total costs of vocational career guidance with its total potential benefits, the break-even point of vocational career guidance was assessed in order to conclude whether vocational career guidance at Windesheim UAS could be a good investment to reduce student dropout.

5.3 Significance of the study

Having both theoretical and practical relevance, the significance of this study is twofold. Theoretically, the proper evaluation of vocational career guidance is known to be very complex (Maguire and Killeen 2003). Emphasis in discussion of vocational career guidance is frequently still on input (e.g. resources, equipment) and process (e.g. guidance interviews, group counselling) rather than output (e.g. retention) (Herr 2002). There is clearly a need to generate as much evidence as possible of the impact of vocational career guidance (Maguire 2004). In order to fill these research gaps, this study had a multi-faceted focus in which both the educational and financial effects of vocational career guidance were investigated at institutional and programme level. Exploring the influence of vocational career guidance on student success, student attrition and student motivation in Dutch higher vocational education, this study answered some of the aforementioned critical notes to Tinto's (1993, 2012) interactionist theory of student departure. In particular, this study met the remarks of Kuh et al. (2006) that concerned the difficulty of teasing out the effects of advising delivered by professional advisors or faculty members. Our study sought to disentangle these effects by conducting three separate but interwoven empirical studies into the educational influence of vocational career guidance on student success, student attrition and student motivation at Windesheim UAS. By focusing on vocational career guidance at one Dutch UAS, we disposed of the aforementioned problem of complexity in properly evaluating vocational career guidance. In addition, this study once again confirmed Tinto's social and academic integration as valuable concepts upon which to base research on student persistence or student dropout. Financially, this study presented a model to evaluate to what extent student dropout should be reduced in order to receive an institutional return on investment in vocational career guidance. As research so far has not reliably revealed the expected benefits of vocational career guidance at institutional level, the financial focus of this study adds to the monetary impact of vocational career guidance in Dutch higher

vocational education. In addition, policy makers of Dutch UAS's at institutional level can tailor this model to calculate the required reduction of student dropout in order to receive an institutional return on investment in vocational career guidance at their particular institution, depending for instance on their educational context and particular student population characteristics.

Practically, the multifocal approach of this study offered a wide perspective on the educational value that vocational career guidance adds to student success in Dutch higher vocational education. More importantly, this study sought to provide some valuable educational recommendations to improve the arrangement of vocational guidance and counselling of students in Dutch higher vocational education. Financially, the study enables Dutch UAS's to conduct similar cost-benefit analyses of vocational career guidance in their specific educational contexts. To sum up, this study has considerable significance both theoretically and practically, and is relevant for both researchers and policy makers at institutional as well as governmental level.

6. Overview of the thesis¹

This thesis comprises the following six Chapters. As an introductory Chapter, Chapter One explains the context and rationale of the study, expounds the conceptual framework and research plan including research questions, and clarifies the outline, applied research methods and significance of the study. Chapter Two expounds on empirical study I (as depicted in Figure 2), thus providing a first description of what happened to first-year student attrition when Windesheim UAS introduced vocational career guidance in its courses, taking into account the challenges Windesheim UAS faced because of the growing enrolment and declining level of preliminary education of new entrants. The aim was to establish the influence of vocational career guidance on first-year student attrition at Windesheim UAS. Subsequently, Chapter Three expounds on empirical study II, thus seeking to determine the influence of vocational career guidance on first-year student success at Windesheim UAS, taking into account other known predictors of student success. As academic and social integration might be increased by guiding students in their educational and professional careers (Dutch Education Council 2008), this Chapter investigated this guidance in terms of enhancing student success, elaborating upon Tinto's (1993) model of student departure. Chapter Four

¹ The chapters in the thesis are included as they have been submitted or published, and therefore differ in reference style and the use of US and UK English.

expounds on empirical study III, thus investigating the influence of vocational career guidance at Windesheim UAS on first-year student motivation, taking into account the specific role played by the transition from secondary school to university with respect to first-year student motivation. Furthermore, student background variables of gender, age and preliminary education were taken into account, as these variables proved to have a considerable impact on the motivation of first-year students in higher education also. Chapter Five expounds on empirical study IV, thus concentrating on the costs and benefits of vocational career guidance as an institutional action to enhance retention and graduation in Dutch higher vocational education. This Chapter presents a cost-benefit analysis of vocational career guidance, comparing the actual costs with the potential benefits² of career guidance. Finally, Chapter Six provides a summary of the major findings of the various studies and reflects on these findings in terms of the conceptual framework as presented in Chapter One. Furthermore, the theoretical and practical implications of these findings are discussed. In addition, both the limitations of this study and a possible direction for future research are addressed. Finally, an epilogue closes this thesis by suggesting an important lesson that could be learned on the basis of this thesis.

Notes

1. This thesis refers to 'career guidance' rather than 'career counselling', which is more common in the USA and Canada (Lundahl and Nilsson 2009)
2. 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)

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Chapter 2

The effectiveness of career guidance in Dutch higher vocational education: a quantitative study

Abstract²

Almost without exception, the 34 countries of the Organisation for Economic Co-operation and Development, residing from North and South America to Europe and Asia-Pacific, have experienced substantial increases in participation in post-secondary education since the beginning of the 1990s. This influx of participants has been accompanied by change and diversification, which have created major challenges that career guidance services are ill-equipped to handle. Focusing on the broad trend in first-year student attrition of Dutch higher vocational education, this paper investigated the influence of career guidance on first-year student attrition of a Dutch University of Applied Sciences (UAS) that in 2006 introduced career guidance in its Bachelor programmes. Taking into account the challenges this UAS faced because of growing enrolment and declining level of preliminary education of new entrants, first-year institutional and system student attrition rates of this UAS (indicating students leaving this UAS and Dutch higher education respectively) were confronted in order to conclude whether career guidance pushed back first-year student attrition rates. As institutional student attrition rose from 2003 to 2008 and system student attrition remained relatively constant, our case study indicated that career guidance helped first-year students, not by preventing them from leaving the institution, but by preventing them from leaving the Dutch higher educational system.

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Introduction

The issue of retention and overcoming high attrition rates in higher education has been a worldwide concern for decades. The scale on which students drop out varies from country to country, in particular among countries of the Organisation for Economic Co-operation and Development (OECD). Established in 1960 when 18 European countries plus the United States and Canada joined forces to create an organisation dedicated to economic development, currently 34 OECD countries from North and South America to Europe and Asia-Pacific include many of the world's most advanced countries, but also emerging countries like Mexico, Chile and Turkey. Recently, an OECD survey revealed that graduation rates for Bachelor's degree programmes in 2009 averaged 38% among OECD countries (OECD 2011). This is to say, more than 50% of all entrants graduate in, for instance, Australia and New Zealand and less than 20% in, for example, Argentina and Belgium. In the Netherlands, around 30% of first-year students of Dutch universities of applied sciences leave or switch during or by the end of their first year (Dutch Education Council 2008). Based on the attrition rate for 2005 (i.e. 31% corresponding to 89.000 first-year students leaving higher vocational education), the Dutch Education Council estimated the corresponding average costs of public finance as €180 million (excluding costs of tuition fees and maintenance award) (Dutch Education Council 2008). Furthermore, if young people choose the wrong career path early in their lives the costs of changing later are high, both for the individual and the educational system (OECD 2009). Focusing on the broad trend in first-year student attrition of nine entry cohorts from 2000 to 2008, this paper investigates the influence of career guidance on first-year student attrition of a Dutch University of Applied Sciences (UAS) that in 2006 introduced career guidance in its Bachelor programmes. Taking into account the challenges this UAS faced because of growing enrolment and declining level of preliminary education of new entrants, first-year institutional and system student attrition rates of this UAS (indicating students leaving this UAS and Dutch higher education respectively) are confronted in order to conclude whether career guidance pushes back first-year student attrition rates.

Career guidance as a means to push back student attrition

Because of the important role of career guidance in addressing the needs of students at risk and early school leavers (OECD 2004a), public policies on career guidance and counselling are receiving increased recognition and support within developed countries (Watts and Fretwell 2004). This paper refers to career guidance rather than career counselling, "which is more common in the United States and Canada" (Lundahl and Nilsson 2009, p. 28). According to the OECD, the European

Commission as well as the World Bank, career guidance refers to “services and activities intended to assist individuals, of any age and at any point throughout their lives, to make educational, training and occupational choices and to manage their careers” (OECD 2004b, p. 10). While personal interviews are still the dominant tool, career guidance includes a wide range of other services, like group discussions, printed and electronic information, vocational courses, structured experience, telephone advice and on-line help (OECD 2004a, p. 19).

The potential effects of career guidance can be thought of at the individual, organisational and societal level (OECD 2004a, p. 33). At the *individual* level, “potential benefits could result from people being better able to manage their choices of learning and work, and to maximise their potential”. At the *organisational* level, “potential benefits could flow to education and training providers if learners were assisted to identify and enter learning programmes which meet their needs and aspirations”. Finally, benefits could result at the *societal* level “if career guidance leads to greater efficiency in the allocation of human resources, for example by enhancing the motivation of learners and workers or reducing dropouts from education and training”.

Main policy issues concerning career guidance in OECD countries

Almost without exception, OECD countries have experienced substantial increases in participation in tertiary education since the beginning of the 1990s (OECD 2004a). Following Salmi and Hauptman (2005), this paper adopted the OECD definition of tertiary education as “a level or stage of studies beyond secondary education. Such studies are undertaken in tertiary education institutions, such as public and private universities, colleges, and polytechnics, and also in a wide range of other settings, such as secondary schools, work sites, and via free-standing information technology-based offerings and a host of public and private entities” (Salmi and Hauptman 2005, p. 80). Between 1995 and 1999 alone, enrolments rates of tertiary education grew by an average of 23% across the OECD (OECD 2001). This increased influx of participants has been accompanied by change and diversification, which have created major challenges for career guidance (OECD 2004a). As institutions become more differentiated, as the number of institutions and Bachelor programmes to choose from increases, and as Bachelor programmes become more differentiated in content between institutions, the need for information and advice increases to help people decide what and where to study. This calls for a comprehensive approach, which career guidance services in many countries’ tertiary education systems are ill-equipped to handle (OECD 2004a). Furthermore, the extent to which tertiary education institutions currently

provide career guidance services varies considerably both between and within OECD countries. On the one hand, some institutions have an integrated student services model which includes career guidance among a range of other student services. On the other hand, some institutions have separate specialised career services which offer a variety of career guidance and placement services (OECD 2004a). The service organises career days that enable students to make contact with employers to discuss post-graduation employment and runs personal development programmes to help develop employability skills. Students can have access to psychological testing to assist their career-decision making. Separate specialised career services are well established in Ireland and the United Kingdom, and to a lesser extent in Australia and (as our study will show further on) in Dutch higher vocational education.

In addition, “the focus of existing career services in tertiary education is frequently narrow, often concentrating on personal or study guidance” (OECD 2004b, p. 20). In the past, little attention was paid to career development and choice, including helping students to develop career management and entrepreneurial skills and to consider taking up self-employment options (OECD 2004b). More recently, there is growing recognition in various countries (e.g. Australia, Canada, Korea, the Netherlands, the United Kingdom and Spain) of the need for tertiary institutions to develop employability and career-management skills in their students. A number of institutions have introduced a portfolio system, which can require students to record not only what they are learning, but also the work-related competencies they are acquiring through learning it (OECD 2004a).

Finally, the specific career guidance needs of particular groups of students are often not catered for (OECD 2004b). In this paper, we focused on students who are dropping out and who are switching to other institutions. As indicated by the OECD (2009), students will rely on informal sources, such as family and friends, if formal sources of career guidance are not available. “While such sources have their strengths, they may lack reliability and impartiality or confine choices to the known and familiar rather than opening new horizons. Moreover, insufficient information at the critical moment may undermine motivation and cause students to drop out. High quality professional career guidance, well-supported by labour market data, is in this respect indispensable” (OECD 2009, p. 94).

Former research on student attrition and the benefits of career guidance

Although various theoretical perspectives – economic, organisational, psychological, sociological – have been advanced to account for the phenomenon of student attrition, Tinto's interactionist theory of college student attrition enjoys near-paradigmatic status (Braxton et al. 2000). Grounded in Van Gennep's (1960) anthropological model of cultural rites of passage, Tinto (1993) postulates that when entering college, students first must *separate* from the group with which they were formerly associated, such as family members and high school peers, then undergo a period of *transition* during which they start to interact in new ways with the members of the new group into which membership is sought and finally *incorporate* or adopt the normative values and behaviours of the new group or college.

The central concept of the Tinto model is the level of a student's integration into the social and academic systems of the college, which determines persistence or dropout. Students come to a particular institution with a range of background characteristics (e.g. secondary school experiences, academic aptitude, family background). These lead to initial commitments, both to the institution attended and to the goal of graduation from college. Together with background characteristics, these initial commitments influence not only how well the student will perform in college, but also how he or she will interact with, and subsequently become integrated into, the institution's social and academic systems. The higher the degree of integration of the individual into these systems, the greater the commitment will be to the specific institution and to the goal of college completion leading to persistence.

Concerning career guidance, Tinto (1993) argues that the utilisation of counselling and advising programmes during the student career underlines the fact that not all students enter college with clear goals. For that reason, institutions have allocated many resources to advising and counselling programmes intended to help guide individuals along the path of goal clarification. According to Tinto, these programmes tend to be most effective when advising and counselling is required for students and when these programmes are systematically linked to the other student services and programmes on campus. The effectiveness "is further enhanced when they are an integral and positive part of the educational process which all students are expected to experience" (Tinto 1993, p. 172).

Despite the generally acknowledged importance of Tinto's (1993) model of student attrition, its obtained empirical support is rather modest (Kuh et al. 2006). According to Barefoot (2004, p. 11), Tinto's theory has been "the subject of much revision and various debates that revolve around: (a) which element - social integration or academic integration - is more important for what types of students; (b) whether Tinto's model actually includes all the variables needed to understand student dropout, especially for non-traditional students; or (c) whether today's students should be expected to achieve Tinto's three stages of a successful higher education career - separation, transition, and incorporation". For example, by empirically and conceptually assessing Tinto's theory in 1997, Braxton, Sullivan and Johnson focused on the degree of support for the 13 primary propositions postulated in Tinto's 1975 foundational theory. Empirical tests robustly support only 5 of the primary 13 propositions (Braxton et al. 2000). To further enhance the relevance of his model, Tinto (2012) extended his model in 2012 offering "a framework for organizing institutional policies and practices that the research on educational attainment and his experience with different types of colleges and universities suggest can positively influence student persistence and degree attainment" (Kuh 2013, p. 339).

In the Netherlands, Klip (1970) and Israëls (1983) both questioned the effectiveness of career guidance in Dutch higher education of the sixties. Based on an experimental research design, Klip (1970) concluded in his PhD thesis that a group of first-year students (N = 60), guided during their first year by peers, did not yield significantly better study results compared to a group of non-guided students (N = 58). Israëls (1983) elaborated on Klip's results by arguing that perceptions of guided students do not naturally imply career guidance to be effective. Furthermore, Israëls (1983) concluded that the results of Klip's experimental research hugely contradicted public opinion regarding career guidance in those days. Some years later, Prins (1997) concluded in his dissertation that career guidance had any influence on the dropout decision of students. In particular, both social and academic integration turned out to have a mediating influence on student dropout in case of faculties that offered a lot of career guidance. However, both social and academic integration could not explain student dropout of faculties that offered little career guidance. At these faculties, a lack of self-confidence and the absence of a propaedeutic diploma particularly explained student dropout. More recently, Zijlstra and Meijers (2008) once again question the effectiveness of career guidance and conclude that it enhances personal development for only those students who comparatively spend more weekly hours on their courses. In addition, Mittendorff (2008) investigated the perceptions of teachers, career counsellors and students on portfolios and

personal development plans for career development at two vocational schools and one prevocational school. The results suggested that these instruments are perceived to be useful when used in a dialogical context (Mittendorff et al. 2008). Furthermore, Van Onzenoort (2010) investigated in his thesis which factors at a medium-sized university of vocational education played a role in the decision to leave the course or to stay on. His research paid special attention to the study selection process and was grounded on Tinto's (1987) model of student departure. Among others, Van Onzenoort (2010, p. 234) concluded that "students who do not dropout have asked persons for their advice more often than dropouts have. In many cases this has been the student counsellor and/or the parents". Finally, Kuijpers, Meijers and Gundy (2011) conducted research among students (aged 12–19 years) enrolled in prevocational and secondary vocational education in the Netherlands and concluded that, without a dialogue with the student about concrete experiences and which is focused on the future, career guidance methods and instruments barely contribute to the acquisition of career competencies.

In sum, the effectiveness of career guidance in Dutch higher vocational education currently is still far from unequivocal. Therefore, research is needed to further explore the effects of career guidance in Dutch higher vocational education, for the benefit of both students and educational institutions as well as society.

Windesheim University of Applied Sciences

Based on the evaluative research so far, "the robustness of data which purports to show a causal link between career guidance and increases in rates of retention and achievement on education or training courses is debatable" (Maguire and Killeen 2003, p. 15). Therefore, this case study particularly focused on the effectiveness of career guidance in terms of student attrition and investigated career guidance within the context of Dutch competence-based higher vocational education.

In an attempt to push back attrition rates, a growing number of universities of applied sciences in the Netherlands are currently implementing new career guidance practices in their competence-based approaches to learning. One of these universities is Windesheim University of Applied Sciences (UAS) in Zwolle, the Netherlands. Based on 21,167 enrolments in the academic year 2010/2011, Windesheim UAS is the ninth largest of thirty-nine universities of applied sciences in the Netherlands (Netherlands Association of Universities of Applied Sciences 2011). Staffed in 2011 with approximately 1,900 employees, Windesheim UAS offers 59 Bachelor's degree programmes, 4 Master's degree programmes and 12 associate degree programmes in ten different faculties.

As a result of the 1999 Bologna Declaration on the European Higher Education Area, Windesheim UAS implemented new educational standards in 2006, to build the new Bachelor-Master structure upon (Windesheim University of Applied Sciences 2005b) and in addition to facilitate students to direct their own learning process by setting up personal learning goals. Based on these new educational standards, the main changes beginning September 2006 included a stronger ‘work-field orientation’, a more applicative and multidisciplinary nature of the curriculum and a stronger orientation towards practice-based research. Regarding the guidance and counselling of students, the emphasis moved from supporting those students who fell short of expectations or even threatened to drop out to guiding all students to design and direct their own learning career and preserving them from dropout. From 2006 onwards, all students of Windesheim UAS acquired an extra, eleventh competence called ‘vocational career self-management’ (Windesheim University of Applied Sciences 2005a) that was added to the generic ten core competences of competence-based Dutch higher vocational education (Commissie Accreditatie Hoger Onderwijs 2001). To acquire this competence, students annually enrolled in a four-credits vocational career guidance course that aimed to provide students all necessary skills and attitude to self-manage their student career on Bachelor’s level. Prescribed by faculty, the course was offered as a mix of individual, peer group as well as class guidance. As a result, both the yearly amount of time spent at class versus individual guidance and the size of the peer group varied per faculty. The main result of this course was the portfolio, in which the student had to prove the disposal of the eleventh competence. At the end of the first year, assessment of vocational career guidance resulted in a vocational career guidance grade point and in a (for all students equal) amount of four credits when passed.

By introducing career guidance, Windesheim UAS expected attrition rates to decline beginning 2007 by at least 15% per year (Windesheim University of Applied Sciences 2007a). Following the OECD (2004a), Windesheim UAS recognised the need for tertiary institutions to develop employability and career-management skills in their students.

Challenges faced by Windesheim UAS as a Dutch university of applied sciences

This study investigated the effectiveness of career guidance in terms of pushing back attrition rates, elaborating upon Tinto’s (1993) model of student attrition. As this model is derived from the situation of higher education in the US in which most students reside on campus, it stresses the impact of both academic and social integration on student persistence. However, most Dutch higher educational

students live off-campus. Therefore, students' social lives in the Netherlands occur to a great extent outside the educational institution. As a consequence, social integration is expected to play a considerably different role in Dutch student attrition compared to the US situation. In sum, Tinto's implications for the Dutch situation of higher vocational education should be considered carefully.

Moreover, Dutch admission and selection policies in higher education differ from the US. First of all, Dutch higher vocational education institutions offer open access, so students have the freedom to choose their own institution and Bachelor programme in Dutch higher vocational education. In addition, since 1993 Dutch institutions of higher vocational education have been allowed to dismiss students at the end of their first year by virtue of a so-called *binding study advice*. Institutions that use this academic dismissal policy impose a binding study advice to students who are considered unfit for their Bachelor programme because of unsatisfactory progress in their first year, taking into consideration personal circumstances causing delay. As a consequence, the institution may withdraw a student's enrolment in that particular Bachelor programme in which the binding study advice was imposed and consequently obliges this student to leave that Bachelor programme. Research shows that binding study advice is currently almost universally adopted in Dutch higher vocational education. In 2008, 98% of all Bachelor programmes in Dutch higher vocational education enforced a binding study advice (Dutch Inspectorate of Education 2010).

The policy of free choice of enrolment as stated above, together with public policy decisions for widening access to encourage more students to start higher education (i.e. lifelong learning), not only have raised concern about maintaining standards (Rickinson and Rutherford 1995) but also presumably involve admitting more students with relatively weak levels of academic attainment prior to university (Arulampalam et al. 2005). Consequently, for the time being concerns about attrition might be taking a back seat, because the most pressing problem of the educational institutions is providing classroom space and basic services to an influx of entering students (Barefoot 2004). This tremendous growth of enrolment was also encountered at Windesheim UAS during the last decade, as enrolments grew from 2,826 students in case of cohort 2000 to 4,848 students in case of cohort 2008. In particular, this growth set in markedly of the year 2003 and mainly concerned students from higher secondary general education and from secondary vocational education, as enrolment of the other preliminary education levels remained relatively constant. Because growing numbers of enrolment in general mean an increase in less-prepared students (Center for Higher Education

Policy Studies 2008), the increased influx of students might lead to an increase in attrition rates of Windesheim UAS. As attrition rates of first-year students from secondary vocational education in the Netherlands are considerably higher compared to students from higher general secondary education and from pre-university education (Netherlands Association of Universities of Applied Sciences 2009), this increase will be enhanced by one third of the influx of Windesheim UAS being students originating from lower-level secondary vocational education. As the level of preliminary education of new entrants determines to a considerable extent the probability that students in higher vocational education will complete their studies successfully, the Netherlands Association of Universities of Applied Sciences points out a so-called *trilemma* as an urgent challenge facing universities of applied sciences: not only the level of the Bachelor's programmes should be upgraded, but at the same time the level of preliminary education of new entrants is under pressure and completion rates have to be improved (Netherlands Association of Universities of Applied Sciences 2009). Our research has been conducted within a time frame where Windesheim UAS both faces this influx of students as well as this trilemma.

Research aim and questions

This study provides a first description of what happened to first-year student attrition when Windesheim UAS introduced career guidance in its Bachelor programmes, taking into account the challenges Windesheim UAS faced because of growing enrolment and declining level of preliminary education of new entrants. The aim was to establish the influence of career guidance on first-year student attrition of Windesheim UAS. Research questions were as follows:

- Does career guidance push back first-year attrition rates of Windesheim UAS?
- How can we explain the influence of career guidance on first-year student attrition of Windesheim UAS, given other known influences on student attrition such as growth of enrolment, binding study advice, gender, preliminary education and switching behaviour of students?

Method

Participants

Obtained from the student administration offices, our data set contained approximately 31,500 individual records from the entire population of full-time students of nine entry cohorts between 2000 (academic year 2000/01) and 2008 (academic year 2008/09). Each record contained the following individual student characteristics: birth date, gender, preliminary education, faculty, Bachelor programme, student number, cohort, date of deregistration and reason for deregistration. Our research concerned first-year students in particular, as around 30% of first-year students at Dutch universities of applied sciences drop out or switch Bachelor programmes during or at the end of the first year (Dutch Education Council 2008). In addition, we excluded both distance education students and students who switched to another Bachelor programme at Windesheim UAS. Distance education students were excluded, because the literature of student attrition in distance education suggests that studies tend to report tentative and contextualized conclusions and are surrounded by great variance and uncertainty (Nichols 2010). Finally, we excluded students that switched Bachelor programmes within Windesheim UAS because of the following. In exploring student attrition, an important distinction must be made between institutional and system attrition, as the former refers to the attrition of persons from individual institutions of higher education, whereas the latter refers to the attrition from the wider higher educational system. Frequently, institutional attrition results in the migration of persons to other institutions. From an institution's point of view, a student who transfers to another institution is a non-completer. However, the student may still progress to a degree without any loss of time. Viewed from the perspective of the higher education system as a whole, it would be inappropriate to count such a student as a non-completer (Yorke 1999). As our case study particularly investigated student attrition from Windesheim UAS, we focused on institutional attrition. At this level, students not only migrate to other institutions but can also switch to a different Bachelor programme within Windesheim UAS. As our research focused on the effects of career guidance on first-year student attrition, students that switched between Bachelor programmes within Windesheim UAS have already been guided during their previous year of study and therefore were excluded from our data set.

Materials

Of September 2006, every enrolled student of Windesheim UAS has been guided to learn to reflect on his or her own strengths and weaknesses, and to direct his or her own learning process by setting up personal learning goals. This guidance

is offered by a small professional staff together with specially assigned faculty and is a comprehensive system which spans the entire four years of student life from admissions to graduation. This guidance can be seen as integral career guidance in which several 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 come together. As such, career guidance of Windesheim UAS follows Tinto's (1993) recommendations for programmes of advising and counselling to be required for all students, to be systematically linked to the other student services and programmes and to be an integral part of the educational process. As provided by instructors who have an extra task in career guidance for which specific time is assigned, instructors are made directly responsible for the supervision and assessment of students.

Reviewing the introduction of career guidance at Windesheim UAS of September 2006, the first experiences of both students and instructors were mixed. Although all ten faculties of Windesheim UAS a year after the introduction indeed offered their students the prescribed amount of guidance and used the various instruments for guidance, first-year students were not always convinced of the effectiveness of career guidance and of the ways in which it had contributed to their study progress. A satisfaction survey among students of Windesheim UAS in 2007 showed that less than 50% of the respondents valued the quality of career guidance as adequate. In addition, students would have liked to have had more individual reflection during their first year, in particular with respect to their study progress (Windesheim University of Applied Sciences 2007b).

Data analysis

First, we investigated trends in first-year student attrition. Differences between cohorts were analysed using logistic regression, in which attrition was regressed on cohort as a dummy variable. 2005 was chosen as the reference category for two reasons: it was the year before career guidance was implemented in most faculties and its attrition rate was very near to the overall mean attrition rate.

Secondly, the influence of career guidance and the other factors of the research questions on attrition was investigated using logistic regression. Cohort and growth of enrolment (i.e. cohort size) were treated as continuous variables. We defined continuous variable age as age at the moment of enrolment. Categorical variables were attrition rate, career guidance, gender, preliminary education and faculty.

Preliminary education defined as 'other' included students, whose admission is based upon a former first-year or final certificate of Dutch higher education and students, aged 21 or over, who passed a special entrance examination. For all categorical variables, dummy variables were created, using the most frequent category (preliminary education) or the category with a mean attrition rate closest to the overall mean (faculty) as the reference category. Because this analysis did not reckon with clustering within cohorts, it was to be expected that the standard errors would be deflated. To correct for this, the p-value for significance was set to .01.

In preparing the data for the regression analysis, we discovered a few cases of multicollinearity. These cases and their consequences for the interpretation and the analysis will be discussed below.

The initial model contained attrition rate as the dependent variable and all other variables except for cohort and cohort size as independent variables. Subsequent models were created by removing non-significant parameters on a one-by-one basis, starting with the least significant parameter. This process was repeated until all remaining parameters were significant at the .01 level, which constituted the final model.

Finally, we completed our analysis by further investigating the influence of growth of enrolment, binding study advice, preliminary education and switching behaviour of students, using time-series analysis in SPSS.

Results

Student attrition figures of Windesheim UAS have changed remarkably over the last decade. Figure 1 reveals the broad trend in student attrition rates of the cohorts 2000 to 2008.

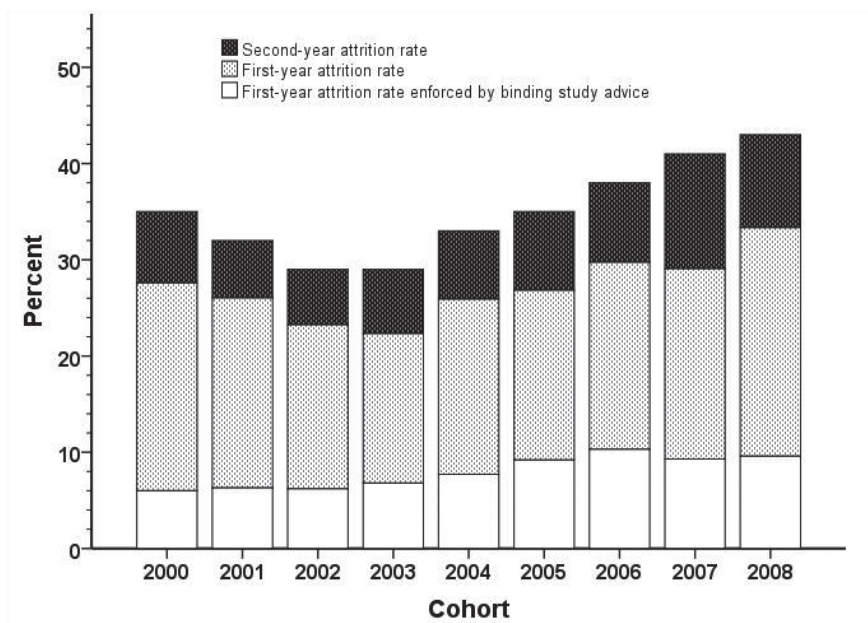


Figure 1. Student attrition rates of Windesheim UAS, cohort 2000-2008.

As Figure 1 shows, years 2000, 2004 and 2005 have similar rates of first-year attrition. 2001 shows a slightly lower attrition rate, whereas both 2002 and 2003 display a significantly lower attrition rate. From 2006 to 2008, a significantly higher attrition rate is apparent. This overall picture represented by Figure 1 is statistically confirmed by our logistic regression analysis as shown in Table 1.

Table 1. Logistic regression analysis of first-year attrition of Windesheim UAS, cohort 2000-2008.

Cohort	b	SE b	Wald's χ^2	df	p	e ^b (odds ratio)
2000	0.04	0.06	0.47	1	.49	1.04
2001	-0.04	0.06	0.52	1	.47	0.96
2002	-0.19	0.06	10.84	1	.00	0.83
2003	-0.24	0.06	18.32	1	.00	0.78
2004	-0.05	0.06	0.77	1	.38	0.95
2005	-	-	172.36	8	.00	-
2006	0.14	0.05	7.65	1	.01	1.15
2007	0.11	0.05	4.80	1	.03	1.12
2008	0.31	0.05	40.84	1	.00	1.36

Note. Cox and Snell R^2 = .005. Nagelkerke R^2 = .008.

The subsequent analyses concern the influence of career guidance and the other factors on the first-year institutional attrition rate (i.e. growth of enrolment, binding study advice, gender, preliminary education and switching behaviour of students). In preparing the data for the regression analysis, we discovered three cases of multicollinearity (see Table 2).

Table 2. Correlations between career guidance, cohort and cohort size of Windesheim UAS, cohort 2000-2008.

		Career guidance	Cohort	Cohort size
Cohort	r	.85		
	n	(9)		
	p	.00		
Cohort size	r	.88	.95	
	n	(9)	(9)	
	p	.00	.00	

Note. Correlation coefficient 'r' with respective number of cases (n) and two-tailed testing of significant differences (p).

As Table 2 shows, correlation coefficients between career guidance, cohort and cohort size indicate multicollinearity. In the presence of multicollinearity, the estimate of a predictor's impact on the dependent variable, while controlling for the other predictors, tends to be less precise than if predictors were uncorrelated with one another. As a consequence, each individual influence of career guidance, cohort and cohort size upon student attrition is in our model statistically unfeasible to distinguish. This means that in trying to establish the influence of career guidance upon student attrition, we might not be able to assess whether this influence is caused by career guidance, caused by a trend in cohort size or caused by a trend in time (i.e. cohort). Nevertheless, it is valuable to use our data set in order to further investigate the influence of career guidance on student attrition of Windesheim UAS, as this data set still enables us to enrich our knowledge of feasible influences on first-year student attrition of Windesheim UAS. We therefore performed a logistic regression analysis of our model as presented in Table 3.

Table 3. Logistic regression analysis of first-year attrition of Windesheim UAS, cohort 2000-2008.

Predictor	b	SE b	Wald's χ^2	df	p	e ^b (odds ratio)
Career guidance	0.25	0.03	91.09	1	.00	1.28
Gender	0.41	0.03	213.67	1	.00	1.51
Age	0.02	0.01	10.41	1	.00	1.02
VWO	-0.59	0.05	120.31	1	.00	0.56
Other	-0.28	0.06	24.26	1	.00	0.76
FE	0.21	0.04	32.47	1	.00	1.23
FED	-0.26	0.05	22.95	1	.00	0.77
FHMS	-0.77	0.06	187.45	1	.00	0.47
FML	0.21	0.05	19.89	1	.00	1.24
FSW	0.12	0.04	9.32	1	.00	1.13
Constant	-1.52	0.09	279.99	1	.00	0.22

Note. Cox and Snell R^2 = .025. Nagelkerke R^2 = .037. VWO = pre-university education. FE = faculty of Education. FED = faculty of Engineering & Design. FHMS = faculty of Human Movement & Sports. FML = faculty of Management & Law. FSW = faculty of Social Work.

Although our model has limited explanatory power, Table 3 shows some interesting findings. Having a significant positive b coefficient, career guidance obviously enhances first-year student attrition of Windesheim UAS. In addition, male students (coded as 1) more often leave during their first year compared to female students. Finally, certain faculties show a significantly higher or lower attrition rate compared to the other faculties.

Other known influences of student attrition

When leaving Windesheim UAS, students not only leave college but also switch to a different educational institution. Consequently, the switching behaviour of students is an important variable to focus upon while disentangling the enhancing influence of career guidance on first-year student attrition of Windesheim UAS. This focus can be applied by taking the system attrition of Windesheim UAS into account, which contains only the attrition rate of students from Windesheim UAS who left the Dutch higher educational system and leaves aside the attrition of students from Windesheim UAS who switched to another institution of higher education. Therefore, Figure 2 compares the first-year institutional attrition rates of Windesheim UAS from 2000 to 2008 (as previously presented in Figure 1) to the first-year system attrition rates of Windesheim UAS from 2000 to 2008 (as collected by the Netherlands Association of Universities of Applied Sciences).

As Figure 2 shows, after a few years of decline the institutional attrition rate of Windesheim UAS almost continuously increases from 2003, while the system attrition rate remains relatively constant from 2000 to 2008. Evidently, more and more first-year students left Windesheim UAS from 2000 to 2008 by switching to another Dutch institution of higher education, but did not leave the Dutch higher educational system.

Because switching behaviour of students obviously has gained significance over the past years, an important supplementary question is to what extent this switching behaviour is fostered by the educational institution (i.e. Windesheim UAS). Therefore, Figure 1 compares the first-year attrition rates from 2000 to 2008 to the first-year attrition rates from 2000 to 2008 enforced by binding study advice. As shown, first-year student attrition enforced by a binding study advice slightly increases from 2000 to 2006 and stabilizes from 2007. Consequently, the increased switching behaviour of students turns out not to be clearly fostered by the imposition of binding study advice.

As an increasing number of first-year students left Windesheim UAS from 2000 to 2008, fewer students consequently entered their second year of study. Because smaller classes make it easier for faculty to know students by name, for students to know their peers, and for students to participate actively in classes (Kuh et al. 2006), the switching behaviour of first-year students is expected to influence second-year student attrition. Therefore, Figure 1 compares the first-year attrition rates of Windesheim UAS from 2000 to 2008 to the second-year attrition rates during the same period of time. As is shown, both first-year and second-year attrition show a similar course from 2000 to 2008, in the sense that attrition rates decline from 2000 to 2003 and increase from 2004 to 2008 (except an incidental small decline of first-year attrition in 2007). Consequently, second-year student attrition of Windesheim UAS turns out not to be influenced by an increase of first-year student attrition due to the switching behaviour of first-year students.

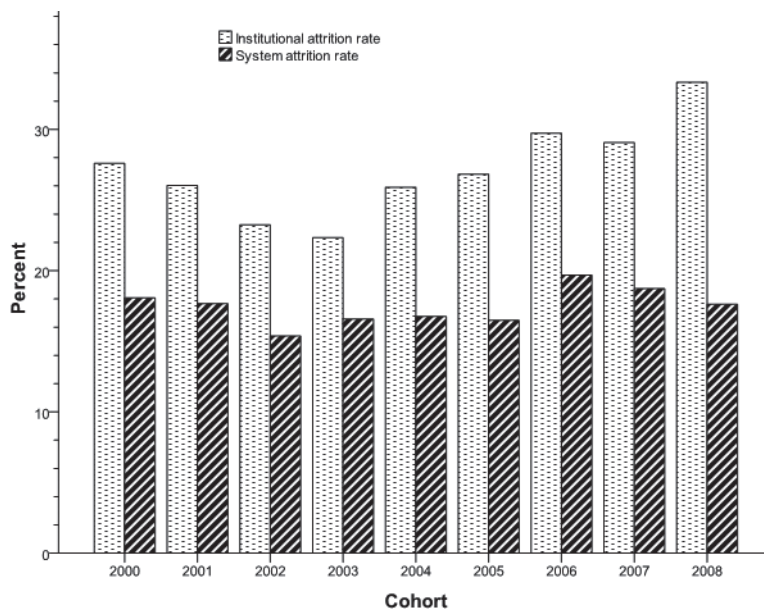


Figure 2. First-year institutional and system attrition rates of Windesheim UAS, cohort 2000-2008.

Discussion

Based on the data presented in this study, we have found no unequivocal evidence that career guidance pushes back first-year student attrition of Windesheim UAS. Founded on Tinto (1993), we initially expected the integral career guidance system of Windesheim UAS to guide students along the path of goal clarification and to prevent them from leaving Windesheim UAS. However, issues appear more complex: from 2000 to 2008, (a) Windesheim UAS faced an influx of students and (b) an increasing number of first-year students left Windesheim UAS by switching to another Dutch institution of higher education without leaving the Dutch higher educational system. Based on the system attrition rate of Windesheim UAS remaining relatively constant, career guidance obviously helped first-year students of Windesheim UAS, not by preventing them from leaving Windesheim UAS but by preventing them from leaving the Dutch higher educational system. However, at the same time the introduction of career guidance showed to be less successful as Windesheim UAS had hoped.

The causes of this entangled state of flux at Windesheim UAS can be twofold. Growth of enrolment turns out to be an important cause of first-year student attrition, as institutional size is often shown to be inversely related to student persistence and degree completion (Kuh et al. 2006). Therefore, the ongoing influx of students could have enhanced first-year student attrition of Windesheim UAS. Moreover, career guidance turns out to be an important cause of first-year student attrition as well, because the extent to which students reflect on their strengths and weaknesses is positively related to student attrition (Kuijpers and Meijers 2008). Consequently, career guidance could have enhanced first-year student attrition of Windesheim UAS.

What do our results imply with respect to theory, policy and practice of career guidance in higher vocational education? First, our study shows from a theoretical perspective, that further research is needed to examine Tinto's (1993) implications for the Dutch situation of higher vocational education. As our results indicate, the integral career guidance system of Windesheim UAS helped first-year students, not by preventing them from leaving the institution, but by preventing them from leaving the Dutch higher educational system. As more and more first-year students left Windesheim UAS from 2000 to 2008 by switching to another Dutch institution of higher education but did not leave the Dutch higher educational system, social integration might indeed play a different role in Dutch student attrition compared to the US situation. Therefore, further research is needed to examine the way career

guidance is influencing first-year student attrition of Windesheim UAS. Second, we have to be careful to fully attribute the results of this study to career guidance because of possible alternative explanations. In particular, the implementation of the Bachelor-Master structure in 2006 could have entailed curricular changes that coincidentally increased first-year student attrition of Windesheim UAS as well. To control for this coincidence, we additionally checked the accreditation reports of the faculties of Business & Economics, Information Sciences and Social Work (in particular the first report per faculty that was published after 2006) for overall changes in the final attainment level that were linked to the implementation of the Bachelor-Master structure in 2006. These three faculties were selected because they were further investigated in a research project. However, we found no particular indications of changes in the final attainment level of these faculties because of curricular changes that could be linked to the implementation of the Bachelor-Master structure in 2006. These results strengthened our conclusion that career guidance helped first-year students of Windesheim UAS. Third, policy implications of our study concern the specific career guidance needs that are currently often not catered for, in particular the needs of students who are dropping out or switching their Bachelor programmes (OECD 2004b). Following Van Onzenoort (2010), these specific career guidance needs in Dutch higher vocational education can be twofold. First of all, higher vocational education institutions should enable first-year students to assess whether they have actually chosen the right discipline. In case this assessment is negative, institutions should consider broader-based foundation courses in higher vocational education, enabling first-year student to switch during the first six months without having to start all over again (Van Onzenoort 2010). Furthermore, institutions have to constantly monitor the careers of their students, as too many students perform well but, often unexpectedly, decide to leave college. As a part of that, “the student should be informed about his or her results at regular intervals and, if necessary, his or her shortcomings should be clearly pointed out” (Van Onzenoort 2010, p. 241). Finally, our study has some practical implications as well. As discussed before, the benefits of career guidance highly depend on a dialogue with the student about concrete experiences and which is focused on the future. In practice however, Dutch students in higher vocational education most of the time talk about their own study career with their peers, while similar discussions with their career guidance instructors only take place one to four times per year (Kuijpers and Meijers 2008). More importantly, the career guidance instructor mainly determines the content of the career guidance session instead of the students themselves. To help students being better able to manage their choices of learning and to maximize their potential (OECD 2004a), we therefore recommend career guidance instructors to foster a frequent and student-

oriented career guidance dialogue. As a part of this dialogue, career guidance should stimulate higher education students to closely consider their student career, including the option to switch to another higher education institution. Even if a student ultimately decides to switch to a different institution expecting a better programmatic or institutional match, this can be the best possible procedure for both the student and the higher education institution involved.

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Chapter 3

Career guidance and student success in Dutch higher vocational education

Abstract³

To enhance student success, a growing number of vocational education and training institutions in the Netherlands are nowadays implementing new career guidance practices in their competence-based approaches to learning. Based on individual-level data of undergraduate first-year full-time students from a Dutch university of applied sciences, this study investigated the influence of career guidance on first-year student success given other known influences such as prior academic performance, faculty and gender. First of all, students obtained more credits in the competence-based educational system in which they from 2006 are guided. Furthermore, students who completed their first year not only obtained more credits after career guidance was introduced in 2006, but at the same time scored substantially higher first grade points in their first year of study compared to students who left during the first six months.

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Introduction

Earning a Bachelor's degree is linked to long-term cognitive, social, and economic benefits to individuals—benefits that are passed onto future generations, enhancing the quality of life of the families of college-educated persons, the communities in which they live, and the larger society (Kuh *et al.* 2008). Unfortunately, too many students who begin college leave before completing degrees. Only half (51%) of US students who enrolled at four year institutions in 1995–96 completed bachelor's degrees within six years at the institutions at which they started (Kuh *et al.* 2008). Furthermore, a survey by the Organisation for Economic Co-operation and Development (OECD) reveals that the figures for Europe and the United States remain more or less steady at 30% or above, although the scale on which students drop out varies from country to country (Yorke and Longden 2004, p. 62). As student attrition implies considerable costs in various areas, enhancing student success is of utmost importance both for students and educational institutions as well as society.

Student success

Student success can be elementary understood as getting students into and through college to a degree or certificate. There are many different aspects of student success, ranging from *student flow* across the entire educational chain (high school graduation, college enrollment, retention, and degree completion), to the *quality and content* of learning, to *outcome variables* like skills achieved as a result of going to college, to positive *educational experiences* (such as student engagement or satisfaction). A broad definition of student success is given by Kuh *et al.* (2006), who define student success as academic achievement, engagement in educationally purposeful activities, satisfaction, acquisition of desired knowledge, skills and competencies, persistence, attainment of educational objectives, and postcollege performance. Each of these dimensions has implications for how student success could be measured and for strategies to change behavior to improve performance. For instance, student engagement is not only widely recognized as an important influence on achievement and learning in higher education, but also considered to be an overarching 'meta construct' that aims to draw together diverse threads of research contributing to explanations of student success (Kahu 2011). The same applies to satisfaction with higher education: As De Lourdes Machado *et al.* (2011) argue, measuring student satisfaction is critical for maintaining and increasing enrolment, managing attrition and retention problems, and making informed decisions about student affairs. However, a review of the literature reveals a lack of consensus on the definition of satisfaction as a concept and that there is therefore

no generally accepted measurement scale for satisfaction with higher education (De Lourdes Machado *et al.* 2011). In sum, student success is a complex construct which can be measured by quantifiable 'hard outcomes' such as retention and completion, and gauged by 'soft outcomes' such as student engagement and distance travelled by learners towards their personal and programme goals (Zepke *et al.* 2010). In our study, we were above all interested in student's academic achievement in the first year, being the year in which success rates in Dutch higher education traditionally are low and attrition rates high (Dutch Education Council 2008). We therefore adopted a quantifiable focus on student success by defining student success as the total amount of credits students obtained at the end of the first year of study, which represent progress towards completion.

Non-completion being the opposite of success

Students leave college for a mix of individual and institutional reasons: change of major, lack of money, family demands, and poor psycho-social fit, among others. More recent theoretical formulations of student persistence underscore the critical role that institutional characteristics and context play in influencing student persistence (Kuh *et al.* 2008). For example, the first year of study can be characterized as a year in which students have to make a transition from the (more protected) secondary school context to the (more open) context of college. As a part of this transition, the first six months of college are an especially important period in student persistence. Therefore, completing the first year is more than half the way in persistence to the Bachelor's degree (Tinto 1988). On the contrary, students who do not succeed in their first year do have a far smaller chance to complete a Bachelor's degree in time (Seidman 2005).

Career guidance as a means to enhance student success

As the extent to which students feel they belong to an institution both academically and socially is an important factor for success in higher education (Dutch Education Council 2008), Tinto's (1993; 2012) interactionist theory of student attrition has guided our research into student success. The central concept of the Tinto (1993; 2012) model is the level of a student's integration into the social and academic systems of the college, which determines persistence or dropout. Students come to a particular institution with a range of background characteristics (e.g. secondary school experiences, academic aptitude, family background). These lead to initial commitments, both to the institution attended and to the goal of graduation from college. Together with background characteristics, these initial commitments influence not only how well the student will perform in college but also how he or she will interact with, and subsequently become integrated into, the institution's

social and academic systems. The higher the degree of integration of the individual into the college system, the greater will be the commitment to the specific institution and to the goal of college completion leading to persistence.

To enhance student success, a growing number of vocational education and training institutions in the Netherlands are nowadays implementing new career guidance¹ practices in their competence-based approaches to learning. According to the OECD (2004), career guidance refers to services intended to assist people, of any age and at any point throughout their lives to make educational, training and occupational choices and to manage their careers. While personal interviews are still the dominant tool, career guidance includes a wide range of other services, like group discussions, printed and electronic information, career education classes, structured experience, telephone advice and on-line help. The potential effects of career guidance can be thought of at the individual, organisational and societal levels (OECD 2004). At the *individual* level, potential benefits could result from people being better able to manage their choices of learning and work, thereby maximising their potential. At the *organisational* level, potential benefits could flow to education and training providers if learners were assisted to identify and enter learning programmes which meet their needs and aspirations. Finally, benefits could result at the *societal* level if career guidance leads to greater efficiency in the allocation of human resources, for example by enhancing the motivation of learners and workers or reducing drop-outs from education and training.

Concerning career guidance, Tinto (1993) argued that the utilization 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 many resources to advising and counselling programmes whose intent is to help guide individuals along the path of goal clarification. According to Tinto, these programmes tend to be most effective when advising and counselling is required for students and when these programmes are systematically linked to the other student services and programmes on campus. The effectiveness is further enhanced when they are an integral part of the educational process which all students are expected to experience (Tinto 1993, p. 172).

Former research on student success and the benefits of career guidance

Numerous studies have examined the factors that influence academic success in and dropout from higher education (Bean 1980; Bean and Metzner 1985; Beekhoven 2002; Bijleveld 1993; Bruinsma 2003; Jansen and Bruinsma 2005; Pascarella and

Terenzini 1983; Prins 1997; Spady 1970; Tinto 1987; 1993; 2012; Van den Berg and Hofman 2005). The interactive approach (Bean and Metzner 1985; Pascarella and Terenzini 1983; Spady 1970; Tinto 1987) is interpreted as an empirical research stream in which student success or dropout is explained in terms of the students' individual characteristics and characteristics from their social environment as well as the interaction between these. In addition, Bean and Eaton (2000) emphasized the importance of student characteristics for success in college. They proposed that personality traits such as self-efficacy help a student persevere when faced with academic and social challenges (Kuh *et al.* 2006). Furthermore, Tinto (2000) emphasized that theoretical models should additionally encompass classroom, faculty and pedagogy in the discussions of student persistence. In the Netherlands, several recent studies have investigated the relationship between a number of student-based and contextual variables and student success (Zeegers 2004). Hoffman and Van den Berg (2000) developed a path model to investigate the inter-relationship between student factors, contextual factors and curricular factors on students' study progress. In addition, Bijleveld (1993) and Jansen (1996) focused their research on curriculum effects on study progress.

As Maguire and Killeen (2003) argued, the model for evaluating career guidance properly is a very complex one. First, the potential effects of career guidance arise at three potential stages: *immediate* attitudinal changes and increased knowledge; *intermediate* behavioural changes for example through improved search efficiency and persistence or entering a particular course; and *longer-term* outcomes such as successes and satisfaction. Second, outcomes of career guidance, both intended and unintended, behavioural and attitudinal, short- and long-term can vary widely. Obtaining clear answers about impacts under these circumstances requires large-scale research with complex experimental designs and statistical controls. As such research is lengthy and expensive, to date limited studies have been conducted. Third, studies of behavioural outcomes require a follow-up design, which raises a number of difficulties (OECD 2004). Not only the effects may not be visible for some time, but also the longer the time that elapses, the more other factors come into play. Studies with control groups are particularly difficult to sustain over extended periods: contact cannot be indefinitely extended, nor guidance indefinitely denied. Based on the evaluative research so far, the international evidence on the benefits of career guidance in general is limited but positive (OECD 2004). It indicates that evidence for its positive impact upon short-term learning, motivational and attitudinal outcomes can be treated with a high degree of confidence, and in the case of its impact upon actual behavior with moderate confidence. However evidence on its impact upon long-term individual outcomes,

and hence upon economic outcomes, is very limited. In the Netherlands, Klip (1970) and Israëls (1983) both questioned the effectiveness of career guidance in Dutch higher education of the sixties. Based on an experimental research design, Klip (1970) concluded that a group of first-year students (N = 60), guided during their first year by peers, did not yield significantly better study results compared to a group of non-guided students (N = 58). Israëls (1983) elaborated on Klip's results by arguing that perceptions of guided students do not naturally imply career guidance to be effective. Nowadays, Zijlstra and Meijers (2008) once again questioned the effectiveness of career guidance and concluded that it enhances personal development for only for a small part of the students in Dutch higher vocational education. In addition, Kuijpers et al. (2011) conducted research among students (aged 12–19 years) enrolled in prevocational and secondary vocational education in the Netherlands and concluded that, without a dialogue with the student about concrete experiences and which is focused on the future, career guidance methods and instruments barely contribute to the acquisition of career competencies. Therefore, research is needed to further explore the effectiveness of career guidance in Dutch higher vocational education, for the benefit of both students and educational institutions as well as society. Our case study focused in particular on investigating the influence of career guidance in terms of student success. Career guidance was studied within the context of competence-based higher vocational education at Windesheim University of Applied Sciences (UAS) in Zwolle, the Netherlands.

Windesheim University of Applied Sciences

With 21,167 enrolments in the course 2010/2011, Windesheim UAS is the ninth largest of thirty-nine Universities of Applied Sciences in the Netherlands (Netherlands Association of Universities of Applied Sciences 2011). With 59 Bachelor's, 4 Master's and 12 associate degree programmes, Windesheim UAS offers a wide variety of study programmes which are brought together in ten different faculties. Staffed in 2010 with approximately 1,770 employees, the emphasis at Windesheim is on a competence-based approach to learning. As we pointed out in an earlier study, institutional attrition rates of first-year fulltime students of Windesheim UAS rose from 22 percent in 2003 to 33 percent in 2008 (Te Wierik *et al.* submitted).

As a result of the 1999 Bologna Declaration on the European Higher Education Area, Windesheim UAS in 2006 set up new educational standards, on the one hand to build its required Bachelor-Master structure (Windesheim University of Applied Sciences 2005) and on the other hand to facilitate students to direct their own learning process by setting up their personal learning goals. Based on these new

educational standards, the main changes from September 2006 included a stronger 'work-field orientation', a more applicative and multidisciplinary nature of the curriculum and a stronger orientation towards practice-based research. Regarding the guidance and counselling of students, the emphasis turned from supporting those students who fell short of expectations or even threatened to drop out to guiding all students to design and direct their own learning career and preserving them from dropout. Furthermore, in guiding and assessing students a link was established between the personal learning process and the career guidance process, thus enabling students to assume a more self-regulated approach to learning. The guidance is offered by a small professional staff together with specially assigned faculty and is a comprehensive system which spans the entire four years of student life from admissions to graduation. This guidance can be seen as integral 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 come together. As such, career guidance of Windesheim UAS follows Tinto's (1993) recommendations for programmes of advising and counselling to be required for all students, to be systematically linked to the other student services and programmes and to be an integral part of the educational process. As provided by teachers who have an extra task in career guidance for which time is assigned, teachers are made directly responsible for the supervision and assessment of students. To be discussed in detail further on, assessment of career guidance results in a career guidance grade point at the end of the first year and in a (for all students equal) amount of credits when passed.

Reviewing the introduction of career guidance at Windesheim UAS from September 2006, the first experiences of both students and teachers were mixed. Although all ten faculties of Windesheim UAS a year after the introduction indeed offered their students the prescribed amount of guidance and used the various instruments for guidance, first-year students were not always convinced of the effectiveness of career guidance and of the ways in which it had contributed to their study progress. A satisfaction survey among students of Windesheim UAS in 2007 showed that fewer than 50 percent of the respondents valued the quality of career guidance as adequate. In addition, students would have liked to have had more individual career guidance during their first year, in particular with respect to their study progress (Windesheim University of Applied Sciences 2007).

Research aim and question

This study sought to determine the influence of career guidance on student success in a Dutch University of Applied Sciences, taking into account other known predictors of student success. As academic and social integration might be increased by guiding students in their educational and professional careers (Dutch Education Council 2008), our research investigated this guidance in terms of enhancing student success, elaborating upon Tinto's (1993) model of student attrition. As this model is derived from the US (campus) situation of higher education and therefore stresses the impact of both academic and social integration on student persistence, this model's implications for the Dutch (non-campus) situation of higher vocational education should be considered carefully. In particular, as students' social lives in the Netherlands occur to a great extent outside the educational institution, social integration is expected to play a considerable different role in student attrition compared to US (campus) situation. Therefore, the particular context of social integration in Dutch higher vocational education served as the context for the basic research questions that guided our work: Does career guidance significantly affect first-year student success, given other known influences such as prior academic performance, faculty and gender? And if so, in which way does career guidance affect student success? The next section will describe our methodology in detail.

Method

Participants

The first part of this study was based on a data set containing 1,317 individual records of full-time first-year students of entry cohort 2008 (course 2008/09). Each record contained the following individual student characteristics: birth date, gender, preliminary education, faculty, study programme, student number, cohort, deregister date, deregister reason, first grade point in course 2008/09, career guidance grade point in course 2008/09 and total number of credits obtained at the end of the course 2008/09. For reasons of comparability of faculties, we included three faculties in our dataset (the other faculties had little or no dispersion of career guidance grade points). Furthermore, we only included freshmen into our dataset (students that switched between study programmes within Windesheim UAS have already been guided during their previous year of study).

The second part of our research was a cohort analysis, based on 7,808 individual records including the same individual student characteristics compared to the first part of our study. Being the two years before and after career guidance was implemented, included cohorts were 2004, 2005, 2007 and 2008.

Materials

Dependent variable student success was measured by the total number of credit points students obtained in their first year. This information was obtained from the student administration offices. As a part of this total number of credits, career guidance credit points were obtained. Being an integral part of the curriculum, assessment of career guidance resulted in a career guidance grade point at the end of the first year and in a (for all students equal) amount of four credits when passed.

Procedure

The data were analyzed in two stages. In the first stage we examined the influence of career guidance on student success by investigating both the assessment and distribution of career guidance grade points of the 2008 cohort of fulltime first-year students. Subsequently, we regressed student success on both the first grade point and career guidance grade point in course 2008/09 as well as on the student characteristics gender, age and preliminary education. In addition, we added the intensity of career guidance (as a proportion of yearly amount of class versus individual career guidance) to our analysis.

To further investigate our preliminary conclusions, the second stage of our research consisted of a cohort analysis. At cohort levels 2004, 2005, 2007 and 2008, we first analyzed the mean number of total credits students obtained at the end of their first year. As this mean number of total credits turned out to increase significantly after career guidance was introduced in 2006, we extended our analysis to faculty level by analyzing the same number of credits for the individual faculties. To exclude alternative explanations, we finally controlled for possible disturbing influences of both preliminary education and first grade point in the course 2008/09.

Results

The starting point of our study was the assessment of first-year career guidance courses, in particular the distribution of first-year career guidance grade points per faculty (see Table 1).

Table 1. Distribution of first-year career guidance grade points taken by faculty, cohort 2008

Faculty	Grade point	Frequency	Percent
Built Environment & Transport	6	22	96
	7	1	4
	Total	23	100
Business & Economics	1	1	1
	6	213	45
	7	155	33
	8	100	20
	10	1	1
	Total	470	100
Health Care	6	164	99
	8	1	1
	Total	165	100
Information Sciences	4	1	1
	5	6	5
	6	16	12
	7	63	49
	8	40	31
	9	2	2
Management & Law	Total	128	100
	6	219	90
	7	21	9
	8	4	1
Media	Total	244	100
	6	5	2
	7	19	8
	8	225	90
Social Work	Total	249	100
	4	18	4
	6	156	32
	7	206	42
	8	101	20
Total	9	10	2
	Total	491	100

As Table 1 shows, faculties of Windesheim UAS differ extensively in dispersion of first-year career guidance grade points. While the faculty of Social Work shows a total of five different grade points, at the faculty of Health Care only one grade point is obtained (excepting a single outlier). Before analyzing the influence of career guidance on student success more extensively, we will first explain the first-year assessment of career guidance courses in the three faculties involved.

Career guidance at the faculty of Business & Economics

At the faculty of Business & Economics, the aim of career guidance is to facilitate students to manage their own learning career by taking gradual steps along their path of vocational clarification. In the course 2008/09, each student participated in a career guidance peer group, consisting of five to seven first-year students. Career guidance was offered by a career guidance teacher as individual, peer group as well as class guidance. One of the main results of first-year career guidance was the portfolio, in which the student not only offered an achievement overview of the propaedeutic year, but also included a letter of application to be enrolled in the remaining section of the bachelor's programme. Another main result of first-year career guidance was the personal development plan. The purpose of this plan was to learn a student to reflect on his or her own strengths and weaknesses, and to direct his or her own learning process by setting up personal learning goals. At the end of the first year, the career guidance teacher assessed both the portfolio as well as the personal development plan. If the portfolio was passed, an independent judge subsequently assessed the letter of application based on an interview with the student. Both assessments had to be passed, otherwise the student was dismissed by virtue of a so-called *binding study advice* because of unsatisfactory first-year achievement (taking into account any impeding personal circumstances). Based on both assessments, the career guidance teacher finally graded career guidance at the end of the first year on a scale from 6 to 8, where 6 is an adequate grade, 7 is a more than adequate grade and 8 is a good grade.

Career guidance at the faculty of Information Sciences

At the faculty of Information Sciences, the aim of career guidance is to learn students how to gather their own information and to transform this information – by developing career competencies – into meaningful knowledge and actions with regard to self, work and career. Following Kuijpers and Meijers (2011), this faculty identifies five distinctive career competencies: capacity reflection (observation of capabilities that are important for one's career); motivation reflection (observation of wishes and values that are important for one's own career); work exploration (researching job possibilities); career directedness (making thoughtful decisions

and taking actions that allow work and learning to correspond with one's capabilities and motivation and challenges at work); and finally, networking (building and maintaining contacts focused on career development). In the course 2008/09, each student participated in a career guidance peer group, consisting up to a maximum of six first-year students. Career guidance was offered by a career guidance teacher as individual, peer group as well as class guidance. The main result of first-year career guidance was the portfolio, in which the student had to prove the disposal of the five distinguished career competencies. The personal development plan played an important part in the development of career directedness. At the end of the course 2008/09, the career guidance teacher graded career guidance by assessing the disposal of each career competency. An overall career guidance grade was calculated by attaching weights to the grades in individual competencies. The grade in capacity reflection, motivation reflection and work exploration each gave an even weight of 20% in the overall grade, while the grade in career directedness weighted 40%. No weight was attached to the competency networking, this competency only had to be passed. A minimum overall career guidance grade point of 5.5 was needed to pass, otherwise the student was dismissed by virtue of a binding study advice (taking into account any impeding personal circumstances).

Career guidance at the faculty of Social Work

At the faculty of Social Work, the aim of career guidance is to facilitate students in building up their own self-image and in managing their own learning career by reflecting on learning experiences. One of the main results of first-year career guidance was the portfolio, to be made up of nine chapters imposed by the faculty, in which the student had to prove the disposal of the five aforementioned career competencies. In the course 2008/09, each student participated in a career guidance peer group consisting of 12 to 15 first-year students. Career guidance was offered by a career guidance teacher as individual, peer group as well as class guidance. Based on the nine chapters portfolio, the career guidance teacher graded each chapter at the end of the first year on a scale from 1 to 10, where 1-3 is a very strongly inadequate grade, 4 is a strongly inadequate grade, 5 is an inadequate grade, 6 is an adequate grade, 7 is a more than adequate grade, 8 is a good grade and 9-10 is a very good grade. An overall career guidance grade point was calculated by dividing the total score by nine, as every chapter gave an even weight. A minimum overall career guidance grade of 5.5 was needed to pass, otherwise the student was dismissed by virtue of a binding study advice (taking into account any impeding personal circumstances).

The influence of career guidance on student success

To examine the influence of career guidance on student success, we first regressed student success on both the first grade point and career guidance grade point in course 2008/09 as well as on the student-background variables gender, age and preliminary education (see Table 2).

Table 2. Summary of linear regression analysis for variables predicting first-year student success of Windesheim UAS, cohort 2008 (N = 1,317)

Predictor	B	SE B	β
First grade point	1.39	0.19	.24***
Career guidance grade point	1.64	0.31	.17***
Preliminary education	1.20	0.37	.10**
Constant	25.05	2.53	

Note. $R^2 = .12$.

** $p < .01$. *** $p < .001$.

Table 3. Correlations between student success and career guidance grade point, taken per faculty by the proportion of first-year class and individual career guidance, cohort 2008

Faculty	CCG	ICG	CCG/ICG	Correlation
Social Work	1,620	90	18.00	.177**
Business & Economics	840	45	18.67	.228**
Information Sciences	1,845	30	61.50	.449**

Note. CCG = yearly amount of class career guidance in minutes; ICG = yearly amount of individual career guidance in minutes.

** $p < .01$ (two-tailed).

Although our model has limited explanatory power, Table 2 shows some interesting findings. In respect to the three faculties involved, the first grade point as well as the career guidance grade point are strong predictors of student success. In addition, both grade points enhance student success as they have a positive B coefficient. Finally, preliminary education also is a positive and powerful predictor of first-year student success.

Since the career guidance grade point seemed to be a strong predictor of student success, the next step in our analysis was to relate this grade point to the intensity of career guidance at the level of the three faculties involved. Therefore, we investigated the yearly amount of time spent at class versus individual career guidance for each faculty and related the proportion of these yearly amounts to the correlation between student success and career guidance grade point (see Table 3).

As Table 3 shows, for all faculties a strong correlation exists between first-year career guidance grade point and first-year student success (presented in ascending order). Obviously, the stronger the correlation between career guidance grade point and student success, the higher the proportion between class and individual career guidance is. Remarkably, the correlation between student success is strongest in faculties where the yearly amount of class career guidance is greatest compared to the yearly amount of individual career guidance.

Further investigation of our preliminary conclusions

So far, our research showed that both the first grade point and the career guidance grade point matter in terms of student success. Furthermore, faculties of Windesheim UAS differ in the way career guidance is offered and assessed. To further investigate these preliminary conclusions, the second part of our research consisted of a cohort analysis. At cohort levels 2004, 2005, 2007 and 2008, we first analyzed the mean number of total credits students obtained at the end of their first year (see Table 4).

Table 4 clearly indicates an increase of the mean number of total credits in 2007 and 2008 compared to 2004 and 2005. Obviously, first-year students of Windesheim UAS obtained more credits in the competence-based educational system in which they from 2006 are guided to direct their own learning process. This finding was statistically confirmed when we tested the equality of the overall mean number of total credits of cohorts 2004 and 2005 (i.c. 38.74 credits) and of cohorts 2007 and 2008 (i.c. 46.73 credits) by a t-test (two-tailed, $p < .001$).

In order to further investigate the significant increase of the mean number of total credits after career guidance was introduced in 2006, we extended our analysis to faculty level by analyzing the same number of credits for the three faculties involved (see Table 5).

Table 4. Descriptive statistics on first-year student success of Windesheim UAS

Cohort	M	SD	N
2004	39.37	13.50	1,942
2005	38.16	13.62	2,089
2007	45.23	15.52	1,510
2008	47.72	15.31	2,267
Total	42.60	15.05	7,808

Table 5. Descriptive statistics on first-year student success taken by faculty

Faculty	Cohort	M	SD	N
Social Work	2004	43.06	14.15	469
	2005	41.18	15.11	470
	2007	50.53	13.76	214
	2008	54.10	11.01	517
	Total	46.91	14.60	1,670
Business & Economics	2004	39.06	13.20	506
	2005	38.25	13.67	570
	2007	40.88	17.43	705
	2008	44.78	16.38	659
	Total	40.94	15.69	2,440
Information Sciences	2004	36.15	10.44	185
	2005	35.10	10.01	152
	2007	53.68	9.31	69
	2008	53.49	8.42	132
	Total	42.36	13.00	538

As Table 5 shows, the mean number of total credits of every faculty initially shows a slight decline from 2004 to 2005 but then reveals a strong increase in 2007 as well as 2008. Evidently, our finding of first-year students obtaining more credits after career guidance was introduced in 2006 is equally apparent in case of the three faculties involved.

Other known influences of student success

Although our results so far indicate career guidance to be a strong predictor of student success, alternative explanations need to be taken into account while investigating student success. First of all, public policy decisions for widening access to encourage more students to begin higher education (i.e. lifelong learning) presumably involve admitting more students with relatively weak levels of academic attainment prior to university (Arulampalam *et al.* 2005). Consequently, the level of preliminary education of first-year students is nowadays expected to influence first-year student success. Therefore, Table 6 presents an overview of the composition of the cohorts 2004, 2005, 2007 and 2008 by level of preliminary education of the three faculties involved.

Regarding the level of preliminary education, Table 6 shows a substantially balanced distribution of first-year students of the cohorts involved. As academic attainment levels prior to university remained considerably stable, the composition of cohorts by level of preliminary education obviously had no disturbing influence on first-year student success of Windesheim UAS.

As a second alternative explanation of student success, we investigated the mean first grade point of the cohorts 2004, 2005, 2007 and 2008 by comparing students who completed their first year ('persisters') to students who left during the first six months ('withdrawals') (see Table 7).

As Table 7 illustrates, the mean first grade point of early withdrawing first-year students initially shows a slight increase from 2004 to 2005 but then reveals a strong decline in 2007 which deteriorates in 2008. However, the mean first grade point of persisting students initially increases slightly from 2004 to 2005 but then rises substantially in both 2007 and 2008. Consequently, persisting students obviously not only obtained more credits after career guidance was introduced in 2006, but at the same time scored substantially higher first grade points in their first year of study.

Table 6. Overview of first-year students by level of preliminary education

			Level of preliminary education				
			MBO	HAVO	VWO	Other	All
Cohort	2004	Number	476	547	76	67	1,166
		%	41	47	6	6	100
	2005	Number	478	564	80	79	1,201
		%	40	47	7	6	100
	2007	Number	581	767	71	78	1,497
		%	39	51	5	5	100
	2008	Number	606	919	93	59	1,677
		%	36	55	5	4	100
	Total	Number	2,141	2,797	320	283	5,541
		%	39	50	6	5	100

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

Table 7. Descriptive statistics on first grade points of first-year students of Windesheim UAS

	Cohort	M	SD	N
Withdrawals	2004	6.36	0.72	105
	2005	6.38	0.72	100
	2007	6.29	1.28	91
	2008	6.11	1.39	16
	Total	6.33	0.95	312
Persisters	2004	6.46	0.74	1,030
	2005	6.52	0.88	1,075
	2007	6.81	1.00	1,386
	2008	7.05	1.38	947
	Total	6.71	1.04	4,438
Total	2004	6.45	0.74	1,135
	2005	6.51	0.87	1,175
	2007	6.78	1.03	1,477
	2008	7.03	1.38	963
	Total	6.69	1.04	4,750

Discussion

As our results show, first-year full-time students of Windesheim UAS obtained more credits in the competence-based educational system in which they from 2006 are guided to direct their own learning process. Based on these initial findings, career guidance met our expectations of helping students to persist in their first year of study. These positive effects of career guidance have also been noted by Prideaux *et al.* (2000), as programmes that aim to assist people in a variety of career-related activities including career decision making, career exploration, career maturity, and career self-efficacy have generally shown positive effects (Prideaux *et al.* 2000, p. 236).

Furthermore, the first grade point as well as the career guidance grade point turned out to be strong predictors of student success. As Pascarella and Terenzini (2005) concluded, college grades are probably the best predictor of student persistence, degree completion and graduate school enrollment. Good grades in the first year are especially important to subsequent academic success and degree completion, as they enhance first-year progress towards timely degree completion.

Moreover, preliminary education proved to be a positive and powerful predictor of first-year student success as well. In the preliminary phase, sufficient preparation at the start of a student's higher education is a prerequisite for success (Dutch Education Council 2008). As Kuh *et al.* (2006) noted, those students who are best prepared coming out of high school are best positioned to do well in college, regardless of who they are, how much money they have, or where they go.

Finally, in our search for alternative explanations the composition of cohorts by level of preliminary education did not affect first-year student success, as academic attainment levels prior to university remained considerably stable over time. Furthermore, students who completed their first year obviously not only obtained more credits after career guidance was introduced in 2006, but at the same time scored substantially higher first grade points in their first year of study compared to students who left during the first six months. The latter finding may be linked to student engagement, defined by Zhao and Kuh (2004) as a range of behaviors that institutions can influence with teaching practices and programmatic interventions such as first-year seminars, service-learning courses, and learning communities. Student engagement positively affects grades in both the first and last year of college as well as persistence to the second year at the same institution (Kuh *et al.* 2008). In further investigating the link between career guidance and student success, we particularly recommend to consider student engagement as a mediating variable.

Notes

1. In this chapter we refer to 'career guidance' rather than 'career counselling', which is more common in the USA and Canada (Lundahl and Nilsson 2009)

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Chapter 4

4

Career guidance and student motivation in Dutch higher vocational education

Abstract⁴

To enhance student success, a growing number of vocational education and training institutions in the Netherlands are nowadays implementing new career guidance practices in their competence-based curricula. Based on data of undergraduate first-year full-time students from three faculties of a Dutch university of applied sciences, this study investigated the influence of career guidance on first-year student motivation given other known influences such as age, gender and prior academic performance. As our results show, student reflection plays a major role in first-year career guidance. In particular, the focus on student reflection conceivably explains the differences between faculties regarding the positive influences of career guidance on first-year student motivation. Furthermore, the level of student motivation at the end of the first year is primarily influenced by its level at the beginning of the year.

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Introduction

What motivates students to stay in or drop out of college? This has been an educator's conundrum for decades (Allen 1999). Students taking a relatively long time to complete their courses and leaving university without a degree or a diploma are perceived as a major problem in higher education (van Berkel et al. 2012). In Dutch universities of applied sciences, around 30 per cent of the first-year students drop out or switch during or at the end of their first year (Dutch Education Council 2008). As student attrition implies considerable costs in various areas, enhancing student success is of utmost importance both for students and educational institutions as well as society.

Student motivation

What variables are important to consider when trying to predict student success in college? As Harackiewicz et al. (2002) argue, students' ability and prior academic performance undoubtedly stand out as key predictors of student success. Apart from that, motivational variables play a key role in predicting success in college as well. As we were particularly interested in the motives that enhance first-year student success, we distinguished four different types of student motivation in the present study with our most basic distinction being extrinsic versus intrinsic motivation. The term *extrinsic motivation* refers to the performance of an activity in order to attain some separable outcome and, thus, contrasts with *intrinsic motivation*, which refers to acting for the inherent satisfaction of the activity itself (Ryan and Deci 2000). With respect to student success, Vansteenkiste et al. (2004) have noted that engaging in learning behaviours with an intrinsic goal resulted in higher academic success rates and better test performance than engaging in behaviours with an extrinsic goal.

Furthermore, we distinguished *achievement motivation* which describes the strength of one's tendency to achieve (Boggiano and Pittman 1992). Students may give up at attempts to achieve because they feel that their efforts are ineffective. This belief pattern and the corresponding behavioural responses, known as learned helplessness, result in lowered performance and may, in fact, be an important factor in underachievement (Eppler and Harju 1997).

Finally, *self-efficacy* has been defined as individuals' confidence in their performance capabilities in a particular context or a specific task or domain (Bandura 1997). Self-efficacy influences the level of goal challenge people set for themselves, the amount of effort they mobilize, and their persistence in the face of difficulties (Bandura

1986, 1991). Pajares (1996) found academic self-efficacy to be strongly associated with academic performance of college students, with positive correlations ranging from $r = .49$ to $r = .71$.

First-year student motivation

Difficulties in the transition from secondary school to university have been of great concern to researchers internationally. As Tinto (2010) argued, the expectations the institution establishes for the quality or level of effort required for successful performance highly influence first-year student motivation and performance. As data from the US National Survey of Student Engagement indicate, students' expectations for the amount of work or effort they have to expend to succeed tend to decline over the course of the first year. Consequently, students appear to expend less effort in their studies than faculty might expect or desire, especially during the critical first year of college (Tinto 2010).

Furthermore, German scientist Busse (2011) found that one of the consequences of the transition to university is a significant decrease in intrinsic motivation experienced by students over the course of the first year. Drawing on incidental evidence indicating motivational loss among first-year students of modern foreign languages at two major English universities, different motivational attributes of first-year students studying German as a foreign language were measured, among them students' perceived level of intrinsic motivation and perceived level of effort expended on German. Students' motivation waned most in the middle stages of the academic year and somewhat recovered towards the end of the year. During the course of the academic year, lack of engagement was a recurrent topic, especially within the university curriculum. One reason for this loss of engagement was the perceived low level of challenge, induced by the efforts the university asked for. Furthermore, first-year students might at first not be aware that they can adjust this level of challenge posed by university classes (Busse 2011).

Besides difficulties in the transition from secondary school to university, age is of great importance for the success of first-year students in higher education. Regarding age, Eppler and Harju (1997) examined the relationship between achievement motivation and academic performance of 262 undergraduate students. Results showed that older students (who had taken a year or more away from college before continuing their studies) are more intrinsically motivated to acquire knowledge and develop competence in skills, while freshmen are more externally oriented toward forming social relationships, receiving external rewards and living up to others' expectations (Eppler and Harju 1997). In addition, Fazey and Fazey (2001)

investigated the extent to which first-year undergraduates, on arrival at university, displayed autonomy-related characteristics and how these characteristics varied across age. Whilst mature students scored higher than did younger students on all the subcomponents of intrinsic motivation, younger students scored significantly higher on identified regulation and on external regulation (Fazey and Fazey 2001). Moreover, Kusurkar et al. (2010) showed that strength of motivation increases with age, between the ages of 18 to 24 years. After the age of about 24 years the strength of motivation is more or less constant. In sum, age considerably influences first-year student motivation in higher education.

Career guidance

To enhance student success, a growing number of vocational education and training institutions in the Netherlands are nowadays implementing new career guidance practices in their competence-based curricula. In this paper we refer to 'career guidance' rather than 'career counselling', which is more common in the USA and Canada (Lundahl and Nilsson 2009). According to the Organisation for Economic Co-operation and Development (2004), career guidance refers to services intended to assist people, of any age and at any point throughout their lives to make educational, training and occupational choices and to manage their careers.

Various career guidance scenarios have been developed (Mittendorff et al. 2008; Reese and Miller 2010) and can be categorized along three dimensions, based on purpose, grouping and curriculum integration. Scenarios may be aimed at improving study skills, preparing for future careers, and professional development. Usually, more than one objective has been chosen as goal for a career guidance programme. Career guidance programmes may be offered on an individual counselling basis or in groups of students. Furthermore, they may be integrated in the curriculum as an obligatory course or may be offered as a separate optional choice.

To foster student motivation, different potential effects of career guidance can be thought of. As Conti (2000) argues, the provision of appealing course offerings, inspiring instructors, exciting social and extracurricular activities, comfortable living arrangements, and emotional support for students could facilitate the intrinsic motivation and adjustment of new students (Conti 2000). Furthermore, Haarala-Muhonen et al. (2011) investigated factors affecting the study pace of law students during their first academic year and concluded that novices need study counselling to interpret disciplinary knowledge and clarify the course requirements for them (Haarala-Muhonen et al. 2011).

As the foregoing examples show, career guidance has the potential to foster first-year student motivation in higher education. To investigate the extent to which this potential is used in Dutch higher education, our case study investigated the influence of career guidance on first-year student motivation within the context of competence-based higher vocational education at Windesheim University of Applied Sciences (UAS) in Zwolle, the Netherlands.

Windesheim University of Applied Sciences

With 21,167 enrolments in the course 2010/2011, Windesheim UAS is the ninth largest of thirty-nine universities of applied sciences in the Netherlands (Netherlands Association of Universities of Applied Sciences 2011). Staffed in 2011 with approximately 1,900 employees, Windesheim UAS offers 59 Bachelor's, 4 Master's and 12 associate degree programmes in ten different faculties.

As a result of the 1999 Bologna Declaration on the European Higher Education Area, Windesheim UAS implemented new educational standards in 2006, to build the new Bachelor-Master structure upon (Windesheim University of Applied Sciences 2005) and in addition to facilitate students to direct their own learning process by setting up personal learning goals. Regarding the guidance and counselling of students, as of September 2006 the emphasis turned from supporting those students who fell short of expectations or were liable to drop out to guiding all students to design and direct their own learning career and preserving them from dropout. Furthermore, in guiding and assessing students career guidance was closely linked to the personal learning process, thus enabling students to assume a more self-regulated approach to learning and at the same time foster their motivation to successfully attend higher education. Teachers who have an extra task in career guidance for which time is assigned, were made directly responsible for the supervision and assessment of students. To be discussed in detail further on, assessment of career guidance resulted in a career guidance grade point at the end of the first year and in a (for all students equal) amount of credits when passed. Furthermore, faculties of Windesheim UAS differed in the first-year assessment of career guidance courses, in particular the distribution of first-year career guidance grade points per faculty. For reasons of comparability of faculties, we only included the faculties of Business & Economics, Information Sciences and Social Work in our study (as the other faculties had little or no dispersion of career guidance grade points). Before presenting our research aim and questions, we will first explain the first-year assessment of career guidance courses in the three faculties involved.

Career guidance at the faculty of Business & Economics

At the faculty of Business & Economics, the aim of career guidance is to facilitate students to manage their own learning career by taking gradual steps along their path of vocational clarification. Career guidance is offered by a career guidance teacher to individual students, peer groups as well as classes. In the course 2008/09, each student participated in a career guidance peer group, consisting of five to seven first-year students from the same class. One of the main products of first-year career guidance was a portfolio, in which the student not only offered an achievement overview of the first year, but also included a letter of application to be enrolled in the remaining three years of the bachelor's programme. Another main product was a personal development plan, intended to teach a student to reflect on his or her own strengths and weaknesses, and to direct his or her own learning process by setting up personal learning goals. At the end of the first year, the career guidance teacher assessed both the portfolio as well as the personal development plan. If the portfolio was passed, an independent assessor separately assessed the included letter of application, based on an interview with the student. Based on both assessments, the career guidance teacher finally graded career guidance at the end of the first year on a scale from 6 to 8, where 6 is an adequate grade, 7 is a more than adequate grade and 8 is a good grade.

Career guidance at the faculty of Information Sciences

At the faculty of Information Sciences, the aim of career guidance is to learn students how to gather their own information and to transform this information – by developing career competencies – into meaningful knowledge and actions with regard to self, work and career. Career guidance was offered by a career guidance teacher to individual students, peer groups as well as classes. In the course 2008/09, each student participated in a career guidance peer group, consisting up to a maximum of six first-year students. The main product of first-year career guidance was a portfolio, in which the student had to prove mastery of a distinguished set of career competencies. At the end of the course 2008/09, the career guidance teacher graded career guidance by assessing the mastery of each career competency. An overall career guidance grade was calculated by attaching weights to the grades for individual competencies.

Career guidance at the faculty of Social Work

At the faculty of Social Work, the aim of career guidance is to facilitate students in building up their own self-image and in managing their own learning career by reflecting on learning experiences. One of the main products of first-year career guidance was a portfolio, to be made up of nine chapters, in which the student had

to prove mastery of a predefined set of career competencies and which included a curriculum vitae and a student reflection on the career guidance course. Career guidance was offered by a career guidance teacher to individual students, peer groups as well as whole classes. In the course 2008/09, each student participated in a career guidance peer group consisting of 12 to 15 first-year students from the same class. At the end of the first year, the career guidance teacher graded each portfolio on a scale from 1 to 10, where 1-3 is a very strongly inadequate grade, 4 is a strongly inadequate grade, 5 is an inadequate grade, 6 is an adequate grade, 7 is a more than adequate grade, 8 is a good grade and 9-10 is a very good grade.

Comparison of career guidance at the three faculties involved

As the previous sections indicate, the three faculties involved show considerable differences in the way career guidance was offered. In particular, these differences concerned the focus on student reflection in first-year career guidance. At the faculties of Business & Economics and Social Work, students were explicitly taught to reflect on their own strengths and weaknesses and on the career guidance course respectively. Although we did not deliberately select these three faculties but included them for reasons of comparability of faculties (as the other faculties had little or no dispersion of career guidance grade points), their differences enabled us to explore the influence of career guidance on first-year student motivation. The next section will present our research questions involved.

Research aim and questions

This study sought to determine the influence of career guidance on first-year student motivation in a Dutch university of applied sciences, taking into account the specific role the transition from secondary school to university plays with respect to first-year student motivation. As we discussed above, one of the consequences of the inappropriate expectations is the significant decrease in intrinsic motivation experienced by students over the course of their first year. Furthermore, student background variables gender, age and preliminary education proved to have a considerable impact on motivation of first-year students in higher education. Therefore, this particular context of first-year student motivation served as the background for the basic research questions that guided our work:

- Does first-year student motivation benefit from career guidance, given other known influences of gender, age, preliminary education and initial student motivation?
- Do differences in career guidance scenarios influence first-year student motivation?

Based on data of undergraduate first-year full-time students of entry cohort 2008 from three faculties of a university of applied sciences, we investigated the influence of career guidance on first-year student motivation in Dutch higher vocational education.

Method

Participants

The participants in our study were 1,443 full-time first-year students of three faculties of Windesheim UAS, see Table 1.

Table 1. Descriptive statistics on participating students

Faculty	Gender		Age	Preliminary education			
	Male	Female		HAVO	VWO	MBO	Other
Business & Economics	514	236	18.7	475	39	230	6
Information Sciences	139	5	19.1	91	5	42	6
Social Work	92	457	19.5	249	25	254	21
Total	745	698	19.1	815	69	526	33

Note. Age = average age at the moment of enrolment; HAVO = higher general secondary education; VWO = pre-university education; MBO = secondary vocational education.

All participants completed a sequence of questionnaires on competencies, skills, motivation, learning style and choice of future profession, which all first-year students of Windesheim UAS had to complete. Only freshmen participated in our research, as students that switched between study programmes within Windesheim UAS have already been guided during their previous year of study.

Materials

Career guidance at Windesheim UAS spanned the entire four years of student life from admissions to graduation and was offered by a career guidance teacher as individual, peer group as well as class guidance. One of the main results of first-year career guidance was the portfolio, in which the student had to prove the disposal of the distinguished career competencies. Being an integral part of the curriculum, assessment of career guidance resulted in a career guidance grade point at the end of the first year and in a (for all students equal) amount of four credits when passed. A minimum overall career guidance grade of 5.5 was needed

to pass, otherwise the student was dismissed by virtue of a so-called *binding study advice* (taking into account any impeding personal circumstances).

Self-report questionnaire MLV-H

All students responded to a Dutch online self-report questionnaire MLV-H [Motivation and Learning style Questionnaire - Higher level] that included 88 items on student motivation and learning style. Scale reliability of this questionnaire varied from $\alpha = .74$ to $\alpha = .89$ (NOA 2013). This has been validated on a sample of 886 first-year students of a Dutch UAS. Students were instructed to respond to the items on a 9-point stanine scale (1 = *very low* to 9 = *very high*). Because we were interested in motivation in particular, we only considered 55 items on four distinct motivational scales: extrinsic motivation, intrinsic motivation, achievement motivation and self-efficacy. The extrinsic motivation scale ($\alpha = .79$) consisted of 13 items regarding the student effort to engage in activities for instrumental or other reasons, such as receiving a reward (e.g., “Attending college means to me that I will make more money in the future”, “When I succeed in college I’m pleased to get compliments from other people”, “I even want to attend college to please someone else”). The intrinsic motivation scale ($\alpha = .88$) was made up of 15 items concerning personal interest in (“The content of the study I’ve chosen is very interesting”) and perceived pleasure from course work (“I don’t need any incentive to study”) as well as the drive to comprehend things (“I’m particularly attending college in order to understand things better”). In the achievement motivation scale ($\alpha = .86$), 17 items with respect to striving for success, taking up challenges and exceeding expectations were used (e.g., “I always make great demands upon my work”, “I really want to achieve things in society”, “It gives me a great feeling when I’m performing better than other people”). The self-efficacy scale ($\alpha = .89$) consisted of 10 items regarding the efficacy of having made the right choice of college and confidently facing the future of college (e.g., “I know with this study exactly what I’m starting”, “I am sure the study will be as I expect it to be”, “Before I decided upon my study, I first had a sufficient look around”).

Procedure

Data on student motivation were collected at the beginning (pre measurement) and at the end (post measurement) of the first year. Furthermore, the first-year career guidance grade point and student background variables gender, age and preliminary education were obtained from the student administration offices.

The pre measurement data on student motivation were collected as a part of a compulsory sequence of questionnaires on competencies, skills, motivation, learning style and choice of future profession. Students responded to these

questionnaires in the Library Instruction Room (LIR) of Windesheim UAS that had 35 computers for student use.

The post measurement data were collected at the end of the first year by volunteering the pre measurement students to complete once again the self-report questionnaire MLV-H. Because of limited capacity of the LIR, we had to collect these data in three stages. In October 2009, we invited all first-year students of the faculties of Information Sciences and Social Work by e-mail to respond to the questionnaire in the LIR. At the end of the subscription period, three iPods were put off for raffle to enhance the response to the invitation. In December 2009, students of the faculty of Business & Economics were invited by e-mail to respond to the questionnaire in the LIR. These students were rewarded course time in which they could transfer the self-report into their personal development plans. Finally, in February 2010 all non-responding students of the three faculties once again were invited by e-mail to respond to the questionnaire, this time by using an internet link.

As a total number of 144 students participated in the post measurement, we analysed the non-response as shown in Table 2.

Table 2. Analysis of non-response in absolute numbers and percentages computed over the subgroup of respondents or non-respondents

		Respondents		Non-respondents	
		<i>n</i>	Percentage	<i>n</i>	Percentage
Gender	Male	73	51	672	52
	Female	71	49	627	48
Preliminary education	HAVO	90	63	725	56
	VWO	8	6	61	5
	MBO	45	31	481	37
	Other	1	0	32	2
	Total	144	100	1,299	100
Faculty	Business & Economics	104	72	646	50
	Information Sciences	16	11	128	10
	Social Work	24	17	525	40
	Total	144	100	1,299	100

Note. HAVO = higher general secondary education; VWO = pre-university education; MBO = secondary vocational education; *n* = absolute number of students.

The mean age of the respondents and non-respondents was 18.6 and 19.1 respectively. The difference in mean age was statistically confirmed when we tested the equality of the mean age by a t-test (two-tailed, $p < .01$), indicating that non-respondents were significantly older compared to respondents. As older students are more intrinsically motivated to acquire knowledge compared to freshmen (Eppler and Harju 1997), this difference in mean age could have caused an underestimation of the level of intrinsic motivation in our data. Regarding faculty, a chi-square test ($\chi^2(2, N = 1,443) = 32.04, p < .001$) statistically confirmed the overrepresentation of respondents of the faculty of Business & Economics in the post measurement. With respect to gender and preliminary education, we found no significant differences between the number of respondents and non-respondents, thus indicating an equal distribution of gender and preliminary education when respondents and non-respondents were compared.

In addition, students possibly showed different levels of initial student motivation and first-year student achievement. To check these differences in case of our population, we compared both student motivation at the start of the first year and total number of first-year credits of responding and non-responding students (see Table 3).

Table 3. Analysis of non-response with respect to initial student motivation and total number of first-year credits computed over the subgroup of respondents or non-respondents

		Respondents		Non-respondents	
		M	SD	M	SD
Student motivation	Extrinsic motivation	38.95	7.30	39.30	7.49
	Intrinsic motivation	49.74	7.16	51.12*	7.64
	Achievement motivation	54.10	9.44	54.02	9.66
	Self-efficacy	35.86	6.40	37.29**	5.77
Total number of first-year credits		54.18	7.51	53.75	7.93

Note. * $p < .05$. ** $p < .01$.

Compared to respondents, Table 3 shows non-respondents to be more intrinsically motivated and have higher self-efficacy. As a consequence, we could have overestimated the influence of career guidance on intrinsic motivation and self-efficacy. Furthermore, this Table shows an equal total number of first-year credits, indicating no differences in first-year student achievement between respondents and non-respondents.

Data analysis

Data were analysed in three stages. First, we analysed the composition of the pre measurement data using descriptive statistics on age. Continuous variable age was defined as age at the moment of enrolment.

Secondly, the pre and post measurement data were compared using multilevel descriptive statistics to trace any possible faculty differences in the development of student motivation in the first year of study.

Thirdly, the first-year influence of career guidance on student motivation was investigated using regression analysis in SPSS. Per motivational scale, post measurement level of student motivation was regressed on the corresponding pre measurement level of student motivation, the first-year career guidance grade point and student background variables gender, age and preliminary education. Preliminary education defined as 'other' included students whose admission is based upon a former first-year or final certificate of Dutch higher education and students aged 21 or over who passed a special entrance examination. Regression analyses were multilevel, in other words they were conducted at each level of the three faculties involved as well as on total level.

Results

Composition of the pre measurement data

To investigate the composition of the pre measurement data, we first examined the pre measurement level of student motivation for age at the moment of enrolment (see Figure 1).

Excepting extrinsic motivation, Figure 1 shows an increasing pre measurement level of student motivation as students are older at the moment of enrolment. This increase was statistically confirmed (intrinsic motivation: two-tailed $t(482) = -9,79$, $p < .001$; achievement motivation: two-tailed $t(482) = -4,97$, $p < .001$; self-efficacy: two-tailed $t(482) = -6,91$, $p < .001$), indicating that students over 21 were significantly more motivated compared to students below 18.

Comparison of pre and post measurement data

Before investigating the first-year influence of career guidance on student motivation in detail, we compared the pre and post measurement data on faculty level to trace any possible faculty differences in the development of student motivation (see Table 4).

Overall, Table 4 shows no significant differences in the mean student motivation scores of pre and post measurement, indicating that student motivation remains relatively stable throughout the first year of study.

At faculty level, both the faculties of Business & Economics and Information Sciences show significant differences in pre and post measurement scores on student motivation. At the former faculty, self-efficacy significantly increased throughout the first year (two-tailed $t(103) = -2,95$, $p < .001$), while the latter faculty shows significantly higher scores on extrinsic motivation at the end of the first year (two-tailed $t(15) = -2,26$, $p < .05$). The faculty of Social Work shows no significant differences in the mean student motivation scores of pre and post measurement.

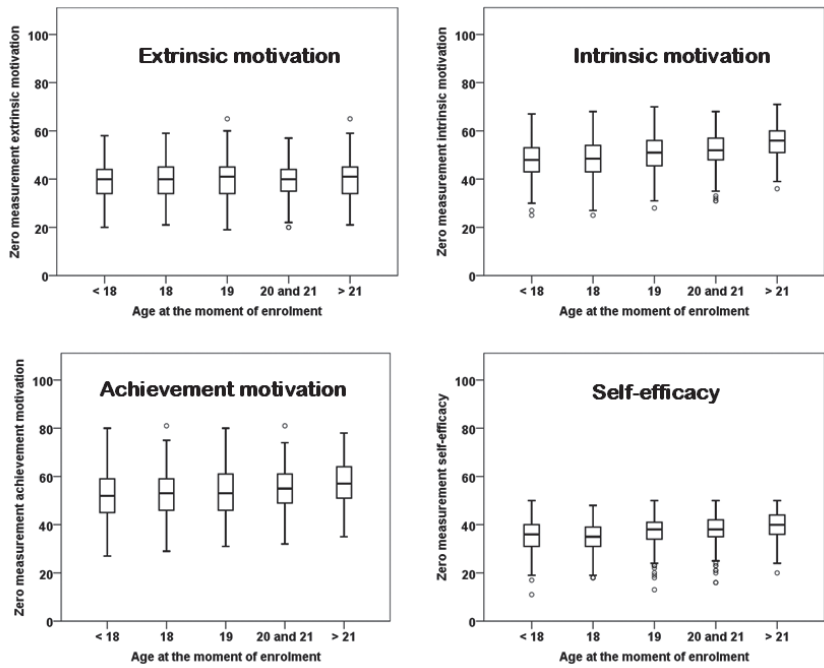


Figure 1. Pre measurement descriptive statistics on student motivation, taken by age at the moment of enrolment

Table 4. Comparison^a of pre and post measurement mean scores on student motivation, taken by faculty

Faculty	Statistic	Extrinsic motivation		Intrinsic motivation		Achievement motivation		Self-efficacy	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post
Business & Economics	Mean	40.84	41.21	49.48	50.05	55.79	54.92	36.23	37.87***
	SD	6.70	7.17	7.14	7.11	8.65	9.77	6.37	5.81
Information Sciences	Mean	35.06	38.19*	48.69	46.56	47.00	49.50	35.69	36.88
	SD	5.87	6.03	7.68	10.24	9.54	10.43	5.47	5.90
Social Work	Mean	33.38	35.58	51.54	51.88	51.54	52.71	34.38	36.00
	SD	7.00	7.52	6.91	7.38	10.25	9.59	7.08	6.83
Total	Mean	38.95	39.94	49.74	49.97	54.10	53.95	35.86	37.44
	SD	7.30	7.39	7.16	7.62	9.44	9.91	6.40	6.00

Note.

^a n = 144.

*p < .05. **p < .01. ***p < .001.

First-year influence of career guidance on student motivation

To determine the first-year influence of career guidance on student motivation, linear regression analyses were conducted at each level of the three faculties involved as well as at overall level. Overall, post measurement score on the distinct motivational scales turned out to be only influenced by the corresponding pre measurement score and proved to be unaffected by the other included predictors. In other words, the level of initial student motivation fully determines the corresponding level at the end of the first year. Moreover, this latter level is evidently not in any way affected by career guidance. Finally, the observed differences in initial student motivation related to age obviously do not further enhance first-year student motivation. At faculty level, significant influences of career guidance and age were only observed at the faculties of Business & Economics and Social Work as will be discussed below.

Results from the regression analysis at the faculty of Business & Economics are presented in Table 5.

Table 5: Linear regression analysis of post measurement self-efficacy, faculty of Business & Economics

Predictor	B	SE B	β
Age	0.86	.40	.24 [*]
Gender	0.59	.98	.05
Preliminary education	-0.81	1.30	-.07
Pre measurement self-efficacy	0.56	.08	.61 ^{***}
Career guidance grade point	1.11	.56	.16 [*]
Constant	-4.24	8.06	

Note. $R^2 = .37$.

^{*}p < .05. ^{**}p < .01. ^{***}p < .001.

At the faculty of Business & Economics, post measurement level of self-efficacy is influenced by pre measurement level of self-efficacy as well as student age and first-year career guidance grade point. Having significant positive B coefficients, post measurement level of self-efficacy increases as both student age and career guidance grade point rise.

Results from the regression analysis at the faculty of Social Work are presented in Table 6.

Table 6: Linear regression analysis of post measurement achievement motivation, faculty of Social Work

Predictor	B	SE B	β
Age	-0.10	.74	-.03
Gender	-10.23	7.73	-.22
Preliminary education	1.63	1.59	.18
Pre measurement achievement motivation	0.60	.18	.65**
Career guidance grade point	4.56	2.08	.39*
Constant	4.01	21.16	

Note. $R^2 = .56$.

* $p < .05$. ** $p < .01$.

At the faculty of Social Work, post measurement level of achievement motivation is influenced by pre measurement level of achievement motivation as well as the first-year career guidance grade point. Considering the absolute value of the significant positive B coefficient, the influence of career guidance on the post measurement level of achievement motivation can be seen as relatively strong.

At the faculty of Information Sciences, pre measurement levels of extrinsic, intrinsic as well as achievement motivation had a significant influence on the corresponding post measurement levels. In case of self-efficacy, no significant influence of pre measurement level on post measurement level was found. Finally, for none of the motivational scales a significant influence of the predictors career guidance, gender, age and preliminary education on the post measurement level of student motivation was found.

Discussion

As our results show, the focus on student reflection conceivably explains the differences between faculties regarding the positive influences of career guidance on first-year student motivation. At overall level of analysis, initial student motivation fully determined the corresponding level at the end of the first year. Despite considerable differences in the level of initial student motivation (in particular related to gender, age and preliminary education), career guidance in itself obviously did not enhance first-year student motivation. In addition, the influence of gender, age and preliminary education on student motivation only concerned the initial level of student motivation, as these predictors did not influence the development of student motivation during the first year of study. Obviously, enhancing student reflection is important for the teaching and learning of new knowledge or skills because reflection affects how instructors and students interact with learning materials they encounter.

Furthermore, the observed relatively stable level of student motivation throughout the first year is intriguing, because it runs contrary to former research (Busse 2011) which indicates motivational loss in the first year of study because of the impact the transition from secondary school to university has on first-year students. As discussed, the reason for this motivational loss was a lack of engagement in the first year, caused by an inappropriate perceived level of challenge that students were exposed to at university and the fact that first-year students might at first not be aware that they can adjust this level of challenge (Busse 2011). Therefore, an interesting issue to be addressed below concerns our finding that first-year student motivation at Windesheim UAS remained relatively stable while elsewhere student motivation waned during the first year of study.

Taking the three faculties together, the post measurement scores on the distinct motivational scales turned out to be only influenced by the corresponding pre measurement scores and proved to be unaffected by the other included predictors. In other words, at this overall level of analysis, initial student motivation fully determined the corresponding level at the end of the first year. Despite considerable differences in the level of initial student motivation (in particular related to gender, age and preliminary education), career guidance obviously did not enhance first-year student motivation in the competence-based educational system of Windesheim UAS. In addition, gender, age and preliminary education only affected the pre measurement level of student motivation, not the post measurement level.

At the level of individual faculties, however, in two (out of three) faculties and within two (out of four) motivational scales we observed significant positive influences of career guidance on first-year student motivation. While the faculty of Business & Economics showed a significant contribution of career guidance to the level of self-efficacy at the end of the first year, career guidance at the faculty of Social Work significantly contributed to the level of achievement motivation at the end of the first year. Remarkably, the faculty of Information Sciences showed no significant influence of career guidance on the post measurement level of any of the distinguished motivational scales.

In sum, two (out of three) faculties showed significant positive influences of career guidance on first-year student motivation whereas at overall level no significant influences were found. Consequently, an interesting topic is to what extent (similarities and differences in) the way career guidance is offered at faculties of Windesheim UAS can elucidate our findings.

At all faculties, career guidance spanned the entire four years of student life from admissions to graduation and was offered by a career guidance teacher as individual, peer group as well as class guidance. Although the portfolio was one of the main products of first-year career guidance at all faculties, the faculties of Business & Economics and Social Work both added extra assignments to this portfolio compared to the faculty of Information Sciences. At the faculty of Social Work, the portfolio additionally included a curriculum vitae and a student reflection on the career guidance course. At the faculty of Business & Economics, the portfolio additionally included a letter of application to be enrolled in the remaining section of the bachelor's programme, which was assessed by an independent assessor based on an interview with the student. Furthermore, students were explicitly taught to reflect on their own strengths and weaknesses, being the main purpose of the personal development plan. In sum, student reflection played a major role in the first-year career guidance courses of both faculties. Moreover, the focus on student reflection conceivably explains the differences between faculties regarding the positive influences of career guidance on first-year student motivation.

This major role of student reflection and its impact on student motivation has been corroborated in previous research. As McNamara (2004) argues, enhancing student reflection is important for the teaching and learning of new knowledge or skills because reflection affects how instructors and students interact with learning materials they encounter. Furthermore, good reflection abilities enhance student motivation, comprehension and performance in learning new knowledge

or skills (Paris and Ayres 1994). Therefore, it is of great importance to develop and strengthen student reflection abilities to help them engage new learning materials in a meaningful manner (Lin et al. 2014). As our results show, career guidance at both the faculty of Business & Economics and the faculty of Social Work obviously enhances these abilities and thus prevents first-year motivational loss. In view of the aforementioned research of Busse (2011), this finding may indicate that student reflection enhances students' awareness they can adjust the level of challenge they are exposed to at university and thus helps students to overcome first-year motivational loss. Concerning career guidance, we therefore strongly recommend to incorporate student reflection as a distinctive part in all first-year career guidance courses.

Limitations

We are well aware that this study has its limitations. For reasons of comparability, our study investigated only a limited number of faculties. As discussed, we could only include three out of ten faculties, since the other faculties of Windesheim UAS had little or no dispersion of career guidance grade points. However, our participating students still accounted for more than twenty-five percent of total first-year enrolments of Windesheim UAS in 2011.

Direction for future research

One of the issues that remains to be addressed, concerns our remarkable finding that career guidance at the one faculty contributed to the level of *self-efficacy* at the end of the first year, while at the other faculty the level of *achievement motivation* at the end of the first year was influenced. Although student reflection was a distinctive part of career guidance at both faculties, the way it influences student motivation is obviously ambiguous. As such, we recommend closer investigation of the way student reflection influences first-year student motivation. Recent investigations into the relations between self-efficacy and reflective thinking indicated that both self-efficacy and reflective thinking contribute to the predictions of quality learning outcomes and achievements. However, preliminary evidence at presents warrants for further research examination (Phan 2013).

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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.

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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.

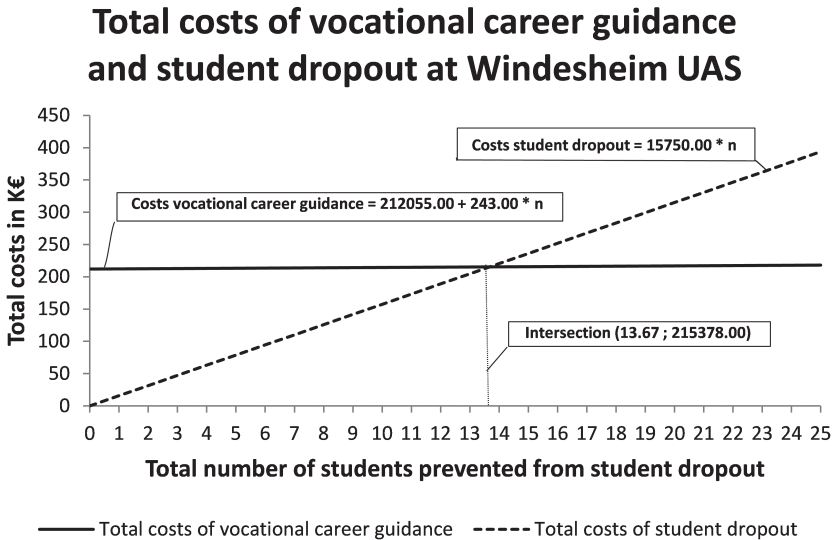


Figure 1. Total costs of vocational career guidance and student dropout at Windesheim UAS

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.e. 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)

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Chapter 6

Discussion

This Chapter provides a summary of the major findings and conclusions of the various empirical studies involved. Subsequently, these main findings and conclusions are reflected upon in terms of the conceptual framework presented in Chapter One. The theoretical and practical implications of these findings are also discussed. The next sections address both the limitations of our research and possible directions for future research. Finally, an epilogue will close this Chapter, suggesting an important lesson that could be learned on the basis of this thesis.

1. Main findings and conclusions of the study

As the findings of the first three empirical studies suggest, vocational career guidance has had a positive influence on reducing first-year student attrition, increasing first-year student success and enhancing first-year student motivation. Educationally, first-year vocational career guidance has thus shown to be beneficial to Windesheim UAS. As institutional first-year attrition rose from 2003 to 2008, and system first-year attrition remained relatively constant, vocational career guidance obviously helped first-year students, not by preventing them from leaving Windesheim UAS but by preventing them from leaving the Dutch higher educational system. Furthermore, students obtained more first-year credits in the competence-based educational system in which they were vocationally guided from 2006. As our search for alternative explanations showed, we found no disturbing influence of preliminary education on first-year student success, as academic attainment levels prior to university remained considerably stable over time. However, the implementation of the Bachelor-Master structure in 2006, coinciding with the adoption of demand-driven education at Windesheim UAS, might also alternatively explain this increased student success to some extent. Therefore, the possible disturbing influence of this implementation will be reflected upon below. Finally, student reflection played a major role in vocational career guidance which might have prevented students from first-year motivational loss. Financially, a small total of 14 students turned out to be the break-even point of vocational career guidance at Windesheim UAS. In other words, the potential benefits of vocational career guidance exceeded the costs of vocational career guidance when only 14 students or more were prevented from dropout as a result of vocational career guidance. As an outcome of choosing particular parameter values in our model to evaluate to what extent student dropout should be reduced in order to receive an institutional return on investment in vocational career guidance, this small number of 14 students will be elaborated upon hereafter. Converted to a reduction in the first-year attrition rate, the potential financial benefits of vocational career

guidance exceeded the total costs of vocational career guidance from a first-year attrition rate reduction of round 2.3 percent. As a result, the required reduction in first-year attrition rate to recover the vocational career guidance costs could be interpreted as feasible.

Founded on Tinto (1993), **the first empirical study** into student attrition initially expected the integral vocational career guidance system of Windesheim UAS to guide students along the path of goal clarification and prevent them from leaving Windesheim UAS. However, issues appeared more complex: from 2000 to 2008, (a) Windesheim UAS faced an increased intake of students and (b) an increasing number of first-year students left Windesheim UAS by switching to another Dutch higher education institution without leaving the Dutch higher educational system. Therefore, the first study found no unequivocal evidence that vocational career guidance pushed back first-year student attrition of Windesheim UAS. Since the system attrition rate of Windesheim UAS remained relatively constant, vocational career guidance obviously helped first-year students of Windesheim UAS, not by preventing them from leaving Windesheim UAS but by preventing them from leaving the Dutch higher educational system. However, at the same time the introduction of vocational career guidance was seen to be less successful than Windesheim UAS had hoped. In particular, by introducing vocational career guidance Windesheim UAS aimed at an annual average decline of institutional attrition rates from 2007 by at least 15 percent (Windesheim University of Applied Sciences 2007a). In retrospect this was possibly a case of aiming too high. Moreover, a satisfaction survey among students of Windesheim UAS in 2007 showed that students would have liked to have had more individual reflection during their first year, particularly with respect to their study progress (Windesheim University of Applied Sciences 2007b). This disappointing student satisfaction presumably urged a reconsideration of the vocational career guidance design. In conclusion, the overall results of vocational career guidance lagging behind expectations gave cause for an improved arrangement of vocational career guidance at Windesheim UAS.

In **the second empirical study** into student success, vocational career guidance met the hypothesized expectations of helping students to persist in their first year of study. As the results showed, first-year full-time students of Windesheim UAS obtained more credits in the competence-based educational system in which they were guided to direct their own learning process from 2006. Furthermore, students who completed their first year obviously not only obtained more credits after vocational career guidance was introduced in 2006, but at the same time obtained substantially higher grades in their first course of study compared to students who

left during the first six months. As indicated before, we found no disturbing influence of preliminary education on first-year student success, as pre-university academic attainment levels remained considerably stable over time. To sum up, the results of this study indicated a significant positive influence of vocational career guidance on student success at Windesheim UAS. However, this increased student success might be alternatively explained to some extent by the implementation of the Bachelor-Master structure in 2006. Therefore, the next section will reflect upon this implementation, coinciding with the adoption of demand-driven education at Windesheim UAS.

In **the third empirical study**, vocational career guidance in itself obviously did not enhance first-year student motivation overall. At the level of individual faculties, however, in two out of three faculties and within two out of four motivational scales, this study revealed significant positive influences of vocational career guidance on first-year student motivation. In particular, vocational career guidance turned out to enhance self-efficacy and achievement motivation at the faculties of Business & Economics and Social Work respectively. Moreover, the focus on student reflection conceivably explained the differences between these faculties regarding the positive influences of vocational career guidance on first-year student motivation. At these faculties, students were explicitly taught to reflect on their own strengths and weaknesses and on the vocational career guidance course respectively. Obviously, enhancing student reflection was important for teaching and acquiring new knowledge or skills because reflection affected the ways in which tutors and students interacted with the learning materials they encountered. As argued by McMillan and Hearn (2008), student self-assessment (defined as a dynamic process in which students self-monitor, self-evaluate and identify correctives to learn) is a critical skill that enhances student motivation and achievement. As a critical part of the self-evaluation process, student reflection helps students think about what they know or have learned while they identify areas of confusion, so they can create new goals (McMillan and Hearn 2008). To sum up, student reflection played an unexpected major role in first-year vocational career guidance at Windesheim UAS. Finally, this study showed student motivation to remain relatively stable throughout the first year of study. This relatively stable level of student motivation as observed throughout the first year was intriguing, because it ran contrary to former research (Busse 2011) which indicated motivational loss in the first year of study because of the impact on first-year students of the transition from secondary school to university. The development and strengthening of student reflection abilities is to be discussed among the reflections on main findings and conclusions, as this is obviously of great importance in helping students to meaningfully undertake new learning materials, thus protecting them from first-year motivational loss.

In the final study, the focus shifted from the first-year educational benefits of vocational career guidance to its potential financial benefits. These benefits derived from the former public funding model for Dutch universities of applied sciences, considering dropout prevention costs as potential benefits of vocational career guidance. Presenting a model to evaluate the extent to which student dropout should be reduced in order to receive an institutional return on investment in vocational career guidance, total actual costs and potential benefits were confronted in order to reach a conclusion as to when vocational career guidance at Windesheim UAS could be regarded as a good investment by reducing student dropout. The actual broken down costs of vocational career guidance included start-up costs, labour costs, pre-measurement costs and certification costs. Total actual costs of vocational career guidance consisted of approximately 70 percent for labour costs and more than 20 percent for pre-measurement costs. Taken together, certification costs and start-up costs accounted for approximately 10 percent of total vocational career guidance costs. Considering the potential benefits of vocational career guidance as dropout prevention costs, vocational career guidance could financially benefit an institution if it prevented students from dropping out. In particular, expecting vocational career guidance to result in an increased number of students graduating instead of dropping out, public funding of Windesheim UAS would consequently increase 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 the cases of graduation and dropout respectively) compared to dropouts. As our results showed, a total of 14 students turned out to be the break-even point of vocational career guidance at Windesheim UAS. In other words, the potential benefits of vocational career guidance exceeded the costs of vocational career guidance when 14 students or more were prevented from dropout as a result of vocational career guidance. Converted to a reduction in the first-year attrition rate of the three faculties involved, the potential benefits of vocational career guidance exceeded its total costs, 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 the case of research cohort 2008 (i.e. 33 percent), the required reduction in the first-year attrition rate to recover vocational career guidance costs could be interpreted as feasible. The answer to the research question as to whether vocational career guidance at Windesheim UAS is worth the investment, was therefore probably yes.

2. Reflections on main findings and conclusions

How should we interpret the intriguing results of this study, indicating both the *positive educational* effects of vocational career guidance and a *feasible return on investment* in vocational career guidance? As interrelated interpretations, this thesis showed vocational career guidance to be valuable to Dutch higher vocational education at both *student* and *institutional* level.

At student level, the second and third empirical studies of this thesis clearly indicated a positive influence of vocational career guidance on first-year student success and first-year student motivation respectively, corroborated in previous research. As indicated by the second empirical study, first-year full-time students of Windesheim UAS obtained more credits in the competence-based educational system in which they were vocationally guided to direct their own learning process from 2006. Following Tinto's (1993) theory of student departure, vocational career guidance thus met the hypothesised expectations of helping students to persist in their first year of study. These positive effects of vocational career guidance were also noted by Prideaux et al. (2000), since the programmes that aim to assist people in a variety of career-related activities including career decision making, career exploration, career maturity, and career self-efficacy have generally shown positive effects (Prideaux et al. 2000, p. 236). Furthermore, this second study indicated that students who completed their first year obviously not only obtained more credits after vocational career guidance was introduced in 2006, but at the same time achieved substantially higher grades in their first course of study compared to students who left during the first six months. The latter finding may be linked to engagement, considered by Fredricks et al. (2004) as a multidimensional construct to be defined in research literature in three ways. Being one of these ways, and particularly relevant to our study, behavioural engagement is once again most commonly defined in three ways. The first definition concerns positive conduct, such as following rules and complying with classroom norms, as well as abandoning disruptive behaviour such as not attending college and getting into trouble. The second definition concerns "involvement in learning and academic tasks and includes behaviours such as effort, persistence, concentration, attention, asking questions, and contributing to class discussion." (Fredricks et al. 2004, p. 62). A third definition concerns participation in extracurricular activities. Concerning student motivation, the third empirical study showed that student reflection plays a major role in first-year vocational career guidance which might have prevented students from first-year motivational loss. This major role of student reflection and its impact on student motivation has also been confirmed in former

research. As McNamara (2004) argues, enhancing student reflection is important for teaching and learning of new knowledge or skills, because reflection affects the ways in which tutors and students interact with the learning materials they encounter. Furthermore, good reflection abilities enhance student motivation, comprehension and performance in acquiring new knowledge or skills (Paris and Ayres 1994). Therefore, it is of great importance to develop and strengthen student reflection abilities to help them to meaningfully undertake new learning materials (Lin et al. 2014). To sum up, the results of the second and third empirical studies showed positive educational effects of vocational career guidance on first-year student success as well as first-year student motivation, as confirmed in previous research.

The first empirical study into student attrition found no unequivocal evidence that vocational career guidance pushed back first-year student attrition at Windesheim UAS. As indicated earlier, possible explanations for this equivocality were twofold. First of all, Dutch higher vocational education (as well as tertiary education in other OECD countries) has experienced substantial increases in participation since the early 1990's. Between 1995 and 1999 alone, tertiary education enrolment rates grew by 23% on average across the OECD (OECD 2001). These increases particularly stemmed from the fact that Dutch students are largely free to enrol in whatever faculty at whatever university of applied sciences they choose (apart from courses subject to a quota and courses at some particular faculties) (OECD 2004). This policy of free choice of enrolment, enhanced by public policy decisions for widening access to encourage more students to start higher education (i.e. lifelong learning), resulted in a tremendous growth of enrolment at Windesheim UAS over the past fifteen years as indicated in Chapter One of this thesis. This growth of enrolment could have distracted the focus of Windesheim UAS from the enhancement of student success. Furthermore, this growth took place mainly from the year 2003, and particularly concerned students from higher secondary general education and secondary vocational education, while enrolment at other levels remained relatively constant. Consequently, this policy of free choice of enrolment could not only have raised concerns about maintaining standards (Rickinson and Rutherford 1995) but at the same time involved admitting more students with relatively low levels of pre-university academic attainment (Arulampalam et al. 2005). Consequently, for the time being concerns about student success might have been taking a back seat, because the most pressing problem of Windesheim UAS in these years was that of providing classroom space and basic services to an influx of new students (Barefoot 2004). Consequently, this tremendous growth of enrolment might have had a disturbing influence on first-year student success figures at

Windesheim UAS. As confirmed by Kuh et al. (2006), enrolment growth turns out to be a significant cause of deteriorating student success, as institutional size is often shown to be inversely related to student persistence and degree completion. In particular, “institutional attributes such as size have an indirect, or mediating effect, because the effect is transmitted through other intervening variables.” (Kuh et al. 2006, p. 53). For example, size is known to affect students’ enrolment decisions through its mediating influences on both students’ perceptions of the institutional environment, faculty and peer interactions, and students’ academic and social involvement. Furthermore, smaller institutions are generally more engaging than larger institutions, partly because they have more favourable faculty-student ratios and smaller classes, which makes it easier for the faculty to know students by name, for students to know their peers, and for students to participate actively in classes (Kuh et al. 2006).

In conclusion, this study acknowledges that student reflection plays a major role in vocational career guidance as being educationally beneficial to student success and motivation. At the same time, the positive influences of vocational career guidance on student attrition could not be unequivocally acknowledged, because of the disturbing influences of enrolment growth and declining levels of preliminary education of new entrants at Windesheim UAS.

As these disturbing influences indicate, we have to be careful to fully attribute the positive educational effects in our empirical studies to vocational career guidance because of possible alternative explanations. As explained before, Windesheim UAS not only introduced vocational career guidance in 2006, but also implemented the Bachelor/Master structure and concurrently adopted demand-driven education to stimulate students to take more responsibility for their learning process and enable them to customise their programmes. Apart from vocational career guidance, these measures may also have positively influenced attrition rates and student success. Although alternative explanations in themselves are rather common in educational research, they have inevitably complicated the assessment of our empirical findings. More importantly, both the implementation of the Bachelor/Master structure and the adaptation of demand-driven education could have brought about curricular changes that also coincidentally increased first-year student success at Windesheim UAS. To control for this coincidence, we additionally checked the accreditation reports of the three faculties involved (in particular the first report per faculty, published after 2006) for overall changes in the final attainment level that were linked to the implementation of the Bachelor/Master structure in 2006. However, we found no particular indications of changes in the final attainment level of these

faculties because of curricular changes that could be linked to the implementation of the Bachelor/Master structure in 2006. These results strengthened our conclusions regarding a positive influence of vocational career guidance on first-year student success and first-year student motivation respectively. Furthermore, Van AnDEL (2012) investigated the concept of demand-driven education from an educational, historical and sociological perspective, while the practice of demand-driven education was investigated through a case study at Windesheim UAS. Among others, his findings showed that “although demand-driven education is said to enable students to decide what, when and how learning will occur, at Windesheim UAS, demand-driven education in most cases allows students to personalise the curriculum by choosing a minor, course, module or internship from a fixed set of options” (Van AnDEL 2012, p. 228). In addition, the curriculum at Windesheim UAS could only be personalised from the second year onwards. As our study concerned the first year in particular, the adaptation of demand-driven education at Windesheim UAS obviously entailed no curricular changes in the first year of study, and therefore could most likely not have interfered with the positive educational effects of first-year vocational career guidance that we observed.

At institutional level, a small total of 14 students turned out to be the break-even point of vocational career guidance at Windesheim UAS. As the potential benefits of vocational career guidance exceeded the costs of vocational career guidance when only 14 students or more were prevented from dropout as a result of vocational career guidance, it feasibly transpired that vocational career guidance justified the investment. As an outcome of choosing particular parameter values in the model we developed, the explanation of this small number of 14 students is twofold. First of all, the potential benefits of vocational career guidance entirely depended on how many students were prevented from dropping out by vocational career guidance. More importantly, each student prevented from dropping out by vocational career guidance represented a substantial financial benefit of €15,750. Secondly, fixed costs of vocational career guidance at Windesheim UAS (i.c. €212,055) were relatively high compared to variable costs (i.c. €243 per student). In other words, total vocational career guidance costs barely depended on how many students enrolled in the vocational career guidance course. Consequently, total vocational career guidance costs could well be recovered as the dropout prevention of vocational career guidance resulted in the aforementioned financial benefit of €15,750 per student. Concurrently, the compulsory character of vocational career guidance restricted the maximum possibility to recover vocational career guidance costs. Although all students had to enrol on this vocational career guidance course, only some of them would actually be preserved from dropout and thus contribute

to the recovery of vocational career guidance costs. Therefore, the fourth study stressed the importance of custom-made adaptation of vocational career guidance in favour of students most likely to drop out in order to maximise the possibility to reduce institutional student attrition. In particular, targeting vocational career guidance solely to students at risk would very likely increase vocational career guidance time per student both quantitatively and qualitatively. At the same time, this targeting would very likely increase vocational career guidance costs because of extra costs to diagnose students, and additionally train vocational career guidance teachers.

Regarding the model we developed, some remarks can be made on the possibility of transferring this model to other educational contexts. As indicated earlier, institutional policy makers of Dutch UAS's can tailor this model to calculate the required reduction of student dropout in order to receive an institutional return on investment in vocational career guidance at their particular institution. In particular the break-even approach, on which our model is based, is a common economic approach to calculate this required reduction. Furthermore, the potential benefits embedded in our model can be considered as a proxy for the real benefits, since it is known to be difficult to determine a strong causal relationship between vocational career guidance and the real (economic) benefits (Herr 2002). To tailor the model, vocational career guidance costs can feasibly be recalculated while applying the appropriate vocational career guidance costs of the institution involved. However, the calculation of potential benefits of vocational career guidance is conceivably much more difficult, as it strongly depends upon the suitability of the current funding model of higher vocational education. In our study, we were able to rely on the number of dropouts and graduates in the educational demand index of the former Dutch funding model, while expecting vocational career guidance to result in an increased number of students graduating instead of dropping out. However, since 2011 this funding model no longer draws the explicit distinction between dropouts and graduates, but rather gives a bonus per graduate on a lower level compared to our study. Therefore, the model should be accommodated to the modified funding rules before transferring it to other educational contexts.

In conclusion, the overall vocational career guidance at Windesheim UAS resulted in positive educational effects on first-year student success as well as first-year student motivation, as confirmed in previous research. Although the implementation of the Bachelor/Master structure and the adaptation of demand-driven education in 2006 might have interfered with these positive educational effects, we found

no particular indications of changes in the final attainment level of the faculties involved because of curricular changes that could be linked to the implementation of the Bachelor/Master structure in 2006. Furthermore, because the adaptation of demand-driven education at Windesheim UAS entailed no curricular changes in the first year of study, it did not interfere with the positive educational effects that we observed on first-year vocational career guidance. In addition, vocational career guidance obviously helped first-year students of Windesheim UAS, not by preventing them from leaving Windesheim UAS but by preventing them from leaving the Dutch higher educational system. Finally, a break-even analysis of vocational career guidance showed that vocational career guidance financially justified the investment of Windesheim UAS.

3. Theoretical implications of the study

Now that the main findings and conclusions of this study have been discussed and reflected upon, an important question is to what extent this study has contributed to the main theories and concepts as discussed in Chapter One. Educationally, this study offers a valuable contribution to existing knowledge on the benefits of vocational career guidance. As argued earlier, evidence of the positive benefits of vocational career guidance based on evaluative research so far is thin on the ground. As indicated by Maguire and Killeen (2003), this scarcity is mainly due to large-scale research with complex experimental designs and statistical controls required to obtain clear answers about the effectiveness of vocational career guidance. As this research is lengthy and expensive, limited studies have been conducted to date (OECD 2004). Although the scale of this study is restricted to a case study of a Dutch university of applied sciences, this study nevertheless gives valuable new insights into the benefits of vocational career guidance in Dutch higher vocational education. In particular, our second empirical study showed that vocational career guidance at Windesheim UAS helps students to achieve more first-year credits. In addition, both the first grade point and the career guidance grade point turned out to be strong predictors of student success.

Furthermore, this study offers new insights into how the educational benefits of vocational career guidance are established. In particular, this study shows that student reflection plays a major role in first-year vocational career guidance courses. Moreover, the focus on student reflection conceivably explains the differences between faculties regarding the positive influences of vocational career guidance. As a result, this study empirically adds to the question of how to best

guide students in Dutch higher vocational education in order to enhance their first-year student success. In particular, this study indicates that student reflection enhances the students' awareness that they can adjust the level of the challenges they meet at university, and thus helps them to overcome first-year motivational loss.

In addition, this study sheds valuable light on the suitability of Tinto's (1993, 2012) model of student departure in Dutch higher vocational education. As explained in Chapter One of this thesis, researchers have expressed critical notes regarding this model over the past few years. Despite this criticism, our study proved Tinto's (1993, 2012) model to be highly useful in explaining first-year student success at Windesheim UAS. Although our first empirical study recommended further research to examine Tinto's (1993) implications for the Dutch situation of higher vocational education, the results of our second empirical study showed that vocational career guidance meets our Tinto-based expectations of helping students to persist in their first year of study. Obviously, vocational career guidance thus guided students of Windesheim UAS along the path of goal clarification. Vocational career guidance may be effective at Windesheim UAS, because it followed Tinto's recommendation to be an integral part of the educational process that all students are expected to experience (Tinto 1993, p. 172). In conclusion, Tinto's (1993, 2012) model clearly withstood the aforementioned criticism and still remains highly relevant in explaining student success in Dutch higher vocational education.

Financially, this study presented a model to assess the extent to which student dropout should be reduced in order to allow an institutional return on investment in vocational career guidance. As such a model has not yet been found in international literature, this model in itself can be considered as a valuable theoretical contribution to this study. In particular, this model can be used in different contexts to perform similar cost-benefit analyses. For example, a cost-benefit analysis of research programmes at UAS's could be performed by confronting the total costs of a particular research programme with the corresponding total benefits. The total costs of a research programme could be calculated as labour costs, costs of laboratory equipment and scientific instruments, costs of office and research supplies, and training and education expenses. The benefits of a research programme could include not only research grants, but also an estimate of corresponding immaterial societal benefits due to increased knowledge.

4. Practical implications of the study

In addition to the theoretical contributions explained above, this study is also of practical importance. First of all, “there is nothing so practical as a good theory” (Lewin 1951, p. 169). In other words, the model we indicated above as that of the theoretical value, offers both researchers and policy advisors an instrument upon which to base educational policy on a similar cost-benefit analysis in their particular educational contexts.

Furthermore, this study qualifies Windesheim UAS a possible direction in which vocational career guidance strategy could be redefined. As the empirical study into student motivation showed, student reflection played a major role in the first-year vocational career guidance courses of two out of three faculties. Moreover, the focus on student reflection conceivably explained the differences between faculties regarding the positive influences of vocational career guidance on first-year student motivation. As argued, it is of great importance to develop and strengthen student reflection abilities because student reflection strengthens students’ awareness that they can adjust the level of challenge they meet at university, thus helping students to overcome first-year motivational loss. Concerning a re-adjustment of vocational career guidance policy, this study therefore strongly recommends incorporating student reflection as a distinctive part of all first-year vocational career guidance courses. Although the research period of this study goes back some years, this recommendation is still valuable to Windesheim UAS today. In its recent corporate strategy (Windesheim University of Applied Sciences 2017), Windesheim UAS aims to personalise higher vocational education in a way that minimises the risk to each student of dropping out of college. Furthermore, each student at Windesheim UAS is offered professional vocational guidance in order to achieve the best personal curricular fit in lifelong learning. As this recent corporate strategy shows, Windesheim UAS persistently abides by the principles of vocational career guidance as implemented in 2006. Therefore, our recommendation to incorporate student reflection as a distinctive part of all first-year vocational career guidance courses still fits into the current strategy of personalised higher vocational education at Windesheim UAS.

Finally, Windesheim UAS was determined to link the implementation of vocational career guidance to clear targets with respect to student attrition. More specifically, by introducing vocational career guidance Windesheim UAS aimed at an annual average decline of institutional attrition rates from 2007 by at least 15 percent

(Windesheim University of Applied Sciences 2007a). On the one hand, the first empirical study particularly indicated the need to re-adjust vocational career guidance policy to attain these targets. On the other hand, the four empirical studies together showed student success to be influenced by a complex interplay of various factors in the first year of study, which should be attuned to one another to effectively enhance first-year student success. Therefore, a sustained and effective enhancement of first-year student success requires a finely tuned series of measures at both student and institutional level. At student level, targeting vocational career guidance solely to students at risk will increase the vocational career guidance time per student both quantitatively and qualitatively. At institutional level, student reflection has to be incorporated as a distinctive part of all first-year vocational career guidance courses.

5. Limitations of the study

Besides theoretical as well as practical implications, this study also has its limitations. First of all, this study is a case study into the effectiveness of vocational career guidance at Windesheim UAS as one of the Dutch universities of applied sciences. Though our study presumably incorporates valuable insights for other Dutch UAS institutions, individual contextual factors may impact the relevance of our study. In other words, the relevance of our study decreases as a particular Dutch UAS showed less similarity to Windesheim UAS. As all Dutch UAS's had to embed the framework of generic ten core competencies (Commissie Accreditatie Hoger Onderwijs 2001) in their particular competence-based approach to higher vocational education, the implementation of this framework increased the number of similarities in the educational context of the UAS's, and, consequently, increased the relevance of our study to other Dutch UAS. Furthermore, most of the UAS's had implemented vocational career guidance in their curricula. However, Windesheim UAS showed certain dissimilarities that reduce the possibility of transferring our study to other UAS's. First of all, Windesheim UAS was the only Dutch UAS that guided students to acquire an eleventh competence called 'vocational career self-management', thus linking the personal learning process to the vocational career guidance process. Furthermore, Windesheim UAS was a more rural UAS with a less diverse student population (particularly with respect to ethnicity and first-generation students) compared for instance to the "big five" metropolitan Dutch UAS's (Windesheim UAS is currently a more diverse UAS, as an auxiliary branch of Windesheim UAS has been located in Almere since 2010, with a diverse student population comparable to metropolitan Dutch UAS's). To decrease the impact of these dissimilarities and

at the same time increase the possibility of transferring our study to other UAS's, we recommend pursuing this study by further investigating the effectiveness of vocational career guidance with respect to diversity. A preferable direction might be to add ethnic descent as an extra parameter to our model and subsequently investigate the influence of diversity on vocational career guidance (Wolff et al. 2010).

Furthermore, our study investigated only a limited number of faculties, except for the first empirical study. As explained, only three out of ten faculties could be included, since only these three faculties had the necessary dispersion of vocational career guidance grade points to investigate the influence of vocational career guidance on student success. Similar to the above-mentioned comparison of Dutch UAS's, the relevance of our study decreases as these three faculties showed less representativeness of Windesheim UAS. As these three faculties represented three different and important disciplines in which Windesheim UAS offered Bachelor's degree programmes (i.e. economics, health care and information and communication technology), our sample covered one third of the entire student population of Windesheim UAS thus increasing the relevance of our study to Windesheim UAS. However, faculties of Windesheim UAS differed in the way vocational career guidance was offered and assessed. These differences concerned in particular the dispersion of first-year career guidance grade points and the yearly amounts of class and individual career guidance. To decrease the impact of these differences and at the same time increase the possibility of transferring our study to Windesheim UAS, we recommend pursuing this study by further investigating the influences that these differences have on the success of (first-year) students of Windesheim UAS.

Finally, the cost-benefit analysis presented in the last empirical study showed three limitations. Firstly, potential benefits of vocational career guidance included both material and immaterial benefits. As this study did not assess immaterial benefits because of their intangible nature, this cost-benefit analysis should be considered as conservative regarding the potential benefits of vocational career guidance. Another limitation concerned the fact that the Dutch funding model since 2011 no longer draws an explicit distinction between dropouts and graduates. The current model provides a bonus per graduate, but at a lower level than the €15,750 in our model. This will definitely have a negative effect on the outcomes of the cost-benefit analysis, as the lower bonus in the current funding model will result in lower potential benefits of vocational career guidance when applied to our model. Finally, this study did not include the potential effects of governmental actions

at system level, for example related to the financial system of student grants and loans. However, our model can similarly be tailored to these potential effects at system level if desired.

6. Directions for further research

The results of this study suggested several directions for further research. The empirical study into student success pointed to student engagement as a possible explanation of the finding that students who completed their first year achieved substantially higher grades in their first course of study compared to students who left during the first six months. In further investigating the link between vocational career guidance and student success, this study therefore recommended that student engagement be considered as a mediating variable.

In addition, the empirical study into student motivation showed that vocational career guidance at one faculty contributed to the level of self-efficacy at the end of the first year, while at the other faculty the level of achievement motivation at the end of the first year was influenced. Although student reflection was a distinctive part of vocational career guidance at both faculties, the way vocational career guidance influenced student motivation was obviously ambiguous. Therefore, a closer investigation of how student reflection influences first-year student motivation is recommended.

Finally, the cost-benefit analysis of vocational career guidance showed several possible directions to refine the particular research of this study. As the immaterial benefits of vocational career guidance can only be vaguely capitalised because of their intangible nature, we did not assess these benefits in this study. Therefore, an important possible direction for future research is to assess the immaterial benefits in order to broaden and deepen the cost-benefit analysis.

7. Epilogue

As an important motive behind this thesis, Windesheim UAS in 2007 was determined to link the implementation of vocational career guidance to clear targets with respect to student attrition. More specifically, by introducing vocational career guidance Windesheim UAS aimed at an annual average decline of institutional attrition rates from 2007 by at least 15 percent (Windesheim University of Applied Sciences 2007a). As indicated earlier, 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 sunken costs (i.e. a high portion of fixed costs) that cannot easily be recovered if wrong institutional choices are made. Therefore, major educational reforms like the implementation of vocational career guidance at Windesheim UAS to some extent imply certain risks, for which higher educational institutions should carefully prepare themselves. These risks were an important source of inspiration for this study into the educational and financial influences of vocational career guidance at Windesheim UAS. While investigating these influences, the effects of vocational career guidance on first-year student success appeared far more complex. As a result, the surplus value of educational/financial research as reported in this thesis is twofold. If an institution changes its educational policy or intends to instigate educational reform, similar research could, and possibly should, play a very important prior role in a timely assessment of the possible consequences of these changes. And, last but not least, in the case of a current educational reform, similar research could, and possibly should, play an essential role in investigating the effects of this reform, both during its implementation and thereafter. To embed this role in the current operation of an institution, the necessary educational data (i.e. student entry characteristics and student achievement) could be obtained from the student administration offices, while the economic model could be adapted to the applicable financial data.

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Summary

S

In the Netherlands, a growing number of vocational education and training institutions have recently implemented new vocational career guidance practices in their competence-based approaches to learning. Vocational career guidance refers to services intended to assist people, of any age and at any point throughout their lives to make educational, training and occupational choices and to manage their vocational careers. While personal interviews are still the dominant tool, vocational career guidance includes a wide range of other services, like group discussions, printed and electronic information, school lessons, structured experience, telephone advice and on-line help. The study reported in this thesis particularly focuses on the effectiveness of vocational career guidance in Dutch higher vocational education.

As one of several institutional actions that enhance retention and graduation, research literature suggest educational institutions to provide students clear guidelines as to what they have to do to be successful. 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. However, international research so far is ambivalent about the benefits of vocational career guidance, in particular because appropriate research designs for evaluating vocational career guidance properly are complex. To fill this research gap and concurrently clarify the added value of vocational career guidance, this study investigated the effectiveness of vocational career guidance to enhance student success in Dutch higher vocational education.

The motives to conduct this study into vocational career guidance were twofold and concerned educational as well as financial aspects. Educationally, the question how to guide students in Dutch higher vocational education best in order to enhance their student success has not yet been fully answered. Although the international evidence on the benefits of vocational career guidance in general is limited but positive, research at a national level concluded that investments in vocational career guidance barely yield a profit. Therefore, additional research is important to clarify the added value of vocational career guidance in Dutch higher vocational education.

Financially, Dutch higher education institutions over the past years have allocated substantial resources to advising and counselling services that intend to guide individual students along the path of goal clarification. Institutional benefits of these resources 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. Therefore, this study not only adopted an educational focus on the effectiveness of vocational career guidance in Dutch higher education, but also a financial focus on this topic to make the financial impact of vocational career guidance in Dutch higher vocational education more clear.

This study investigated the effectiveness of vocational career guidance both educationally and financially in four empirical studies, which successively concentrated on the influence of vocational career guidance on student attrition, student success, student motivation and the potential financial benefits of vocational career guidance. In particular, the following research questions (in corresponding order of the four empirical studies involved) were addressed:

1. Does vocational career guidance push back *first-year attrition rates*? And how can the influence of vocational career guidance on *first-year student attrition* be explained, given other known influences on *student attrition* such as growth of enrolment, binding study advice, gender, preliminary education and switching behaviour of students?
2. Does vocational career guidance significantly affect *first-year student success*, given other known influences such as prior academic performance, faculty and gender? And if so, in which way does vocational career guidance affect *student success*?
3. Does *first-year student motivation* benefit from vocational career guidance, given other known influences of gender, age, preliminary education and initial student motivation? And do differences in vocational career guidance scenarios influence *first-year student motivation*?
4. To what extent should student dropout be reduced in order to receive an *institutional return on investment* of vocational career guidance?

The four empirical studies were conducted at Windesheim University of Applied Sciences (UAS), a medium-sized Dutch UAS that in 2006 adopted a new approach towards learning commonly known as demand-driven education. All students of Windesheim UAS from 2006 acquired an extra, eleventh competence called 'vocational career self-management', that was added to the ten core competencies of competence-based Dutch higher vocational education. To acquire this competence, students annually enrolled in a four-credits vocational career guidance course that aimed to provide students all necessary skills and attitudes to self-manage their

student career on Bachelor's level. As provided by teachers who had an extra task in vocational career guidance for which time was assigned, teachers were made directly responsible for the supervision and assessment of vocational career guidance. By introducing vocational career guidance, Windesheim UAS aimed, as of 2007, an annual average decline of institutional attrition rates by at least 15 percent.

The first empirical study, as described in *Chapter 2*, aimed at identifying the influence of vocational career guidance on first-year student attrition. Expecting the integral vocational career guidance system of Windesheim UAS to guide students along the path of goal clarification and to prevent them from leaving Windesheim UAS, this quantitative study investigated the broad trend in first-year student attrition of the cohorts 2000 to 2008 of Windesheim UAS. In addition, the influence of vocational career guidance and other known predictors of student attrition was examined.

As a result of several contextual factors influencing first-year student attrition, this first study found no unequivocal evidence that vocational career guidance pushed back first-year student attrition of Windesheim UAS. First of all, Windesheim UAS faced a tremendous growth of enrolment from 2000 to 2008 that might have led to an increase in first-year attrition rates. Furthermore, this growth of enrolment particularly concerned students from higher secondary general education and from secondary vocational education, as enrolment of the other preliminary education levels remained relatively constant. In addition, an increasing number of first-year students left Windesheim UAS by switching to another Dutch institution of higher education without leaving the Dutch higher educational system. As a consequence, the institutional attrition rate of Windesheim UAS, indicating the attrition of persons from individual institutions of higher education, worked out differently compared to the system attrition rate of Windesheim UAS, referring to the attrition from the wider higher educational system. Based on the system attrition rate of Windesheim UAS remaining relatively constant, vocational career guidance obviously helped first-year students of Windesheim UAS, not by preventing them from leaving Windesheim UAS but by preventing them from leaving the Dutch higher educational system. However, at the same time the introduction of vocational career guidance showed to be less successful as Windesheim UAS had hoped. In particular, a satisfaction survey among students of Windesheim UAS in 2007 showed that students would have liked to have had more individual reflection during their first year, especially with respect to their study progress.

The second empirical study, as described in *Chapter 3*, investigated vocational career guidance in terms of enhancing student success. Aiming to determine whether

vocational career guidance significantly affects first-year student success, this quantitative study particularly concerned a cohort analysis of the mean number of total credits students obtained at the end of their first year. To exclude alternative explanations, this study controlled for possible disturbing influences of other known predictors of student success such as preliminary education and first grade in the first course of academic year 2008/09.

In this study into student success, vocational career guidance met the hypothesized expectations of helping students to persist in their first year of study. As the results showed, first-year full-time students of Windesheim UAS obtained more credits in the competence-based educational system in which they from 2006 were guided to direct their own learning process. Furthermore, students who completed their first year obviously not only obtained more credits after vocational career guidance was introduced in 2006, but at the same time made substantially higher first grades in their first course of study compared to students who left during the first six months. In sum, the results of this study clearly indicated a significant positive influence of vocational career guidance on student success of Windesheim UAS. As our search for alternative explanations showed, we found no disturbing influence of preliminary education on first-year student success, as academic attainment levels prior to university remained considerably stable over time. However, the implementation of the Bachelor-Master structure in 2006, coinciding with the adoption of demand-driven education at Windesheim UAS, to some extent might also alternatively explain this increased student success.

The third empirical study, as described in *Chapter 4*, used a quantitative approach to determine the influence of vocational career guidance on first-year student motivation. Based on a sequence of questionnaires on competencies, skills, motivation, learning style and choice of future profession which all first-year students of Windesheim UAS had to complete, this study particularly focused on the motives that enhance first-year student success. Drawing on incidental evidence indicating motivational loss among first-year students of modern foreign languages at two major English universities, this study expected a decrease in intrinsic motivation experienced by students over the course of the first year.

As this study showed, vocational career guidance in itself obviously did not enhance first-year student motivation at overall level. At the level of individual faculties, however, in two (out of three) faculties and within two (out of four) motivational scales this study observed significant positive influences of vocational career guidance on first-year student motivation. Moreover, the focus on student

reflection conceivably explained the differences between these faculties regarding the positive influences of vocational career guidance on first-year student motivation. Therefore, student reflection may have played an unexpected major role in first-year vocational career guidance.

The fourth empirical study, as described in *Chapter 5*, concentrated 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, this study presented 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 quantitative break-even analysis that confronted the total costs of vocational career guidance with its potential benefits.

As an outcome of choosing particular parameter values in our model, this fourth and final empirical study showed a small number 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 exceeded the costs of vocational career guidance when 14 students or more were 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 exceeded 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 research cohort 2008 (i.e. 33 percent), the needed reduction in first-year attrition rate to recover the vocational career guidance costs could be interpreted as feasible. The research question, whether vocational career guidance at Windesheim UAS is worth the investment was therefore, and likely, yes.

In *Chapter 6*, the findings of the different studies are brought together and reflected upon. In overall conclusion, vocational career guidance at Windesheim UAS resulted in positive educational effects on first-year student success as well as first-year student motivation, which were confirmed in previous research. In addition, vocational career guidance obviously helped first-year students of Windesheim UAS, not by preventing them from leaving Windesheim UAS but by preventing them from leaving the Dutch higher educational system. Finally, a break-even analysis of vocational career guidance showed vocational career guidance financially to be worth the investment of Windesheim UAS.

Furthermore, *Chapter 6* discusses some theoretical and practical implications as well as the limitations of this study and makes suggestions for further research. In addition, this Chapter particularly highlights the risks for which higher educational institutions should carefully prepare themselves in case of major educational reforms like the implementation of vocational career guidance at Windesheim UAS in 2006. These risks were an important source of inspiration for this study into the educational and financial influences of vocational career guidance at Windesheim UAS. While investigating these influences, the effects of vocational career guidance on first-year student success appeared far more complex. As a result, the surplus value of educational-financial research as reported in this thesis is twofold. In case an institution changes the educational policy or intends to start an educational reform, similar research could, and likely should beforehand play a very important role in a timely assessment of the possible consequences of these changes. And, last but not least, in case of a current educational reform, similar research could, and likely should play an essential role in investigating the effects of this reform, both meantime and afterwards.

Nederlandse samenvatting

(Summary in Dutch)

N

Het onderzoek dat in dit proefschrift wordt gerapporteerd richt zich op de effectiviteit van studieloopbaanbegeleiding in het Nederlandse hoger beroepsonderwijs. De afgelopen jaren nam een toenemend aantal Nederlandse hogescholen studieloopbaanbegeleiding in het curriculum op als onderdeel van competentiegericht hoger beroepsonderwijs. Studieloopbaanbegeleiding is erop gericht om individuen, ongeacht leeftijd en levensfase, te helpen bij het maken van studie- en beroepskeuzes en bij het vormgeven van hun studieloopbaan. Hoewel studieloopbaanbegeleiding veelal aan de hand van individuele gesprekken wordt vormgegeven, kan het ook in een groot aantal andere vormen worden aangeboden zoals groepsgesprekken, klassikale les, praktijkopdrachten, informatie in zowel papieren als digitale vorm, telefonisch advies en online ondersteuning.

Eén van de mogelijke manieren waarop instellingen studiesucces kunnen bevorderen is, zo blijkt uit onderzoek, het geven van duidelijke richtlijnen aan studenten over hoe ze succesvol kunnen studeren. In lijn met dit onderzoek besteden hogescholen dan ook een substantieel deel van de beschikbare middelen aan studieloopbaanbegeleiding. Aangezien de methodiek om studieloopbaanbegeleiding op de juiste waarde te schatten een hele lastige is, kunnen uit internationaal onderzoek tot dusver geen eensluidende conclusies over het nut van studieloopbaanbegeleiding worden getrokken. Dit onderzoek levert een bijdrage aan het vullen van deze leemte door de effectiviteit van studieloopbaanbegeleiding in relatie tot het verbeteren van studiesucces na te gaan en daarmee de toegevoegde waarde van studieloopbaanbegeleiding te verhelderen.

De tweeledige aanleiding tot dit onderzoek naar studieloopbaanbegeleiding was zowel onderwijskundig als financieel van aard. Onderwijskundig gezien is de vraag, op welke wijze studenten in het Nederlandse hoger beroepsonderwijs het best kunnen worden begeleid ter verbetering van hun studiesucces, tot dusver nog niet volledig beantwoord. Het op kleine schaal uitgevoerde internationale onderzoek is overwegend positief over de toegevoegde waarde van studieloopbaanbegeleiding. Nationaal onderzoek daarentegen heeft tot dusver laten zien, dat investeringen in studieloopbaanbegeleiding slechts in beperkte mate rendabel zijn. Aanvullend onderzoek is dan ook van groot belang om de toegevoegde waarde van studieloopbaanbegeleiding in het Nederlandse hoger beroepsonderwijs te verhelderen.

Financieel gezien besteedden Nederlandse hoger onderwijsinstellingen de afgelopen jaren een substantieel deel van hun middelen aan voorzieningen om op individueel niveau studenten te begeleiden bij het bereiken van hun doelen. Deze voorzieningen kunnen voor instellingen onder meer een voordeel opleveren

wanneer ze studie-uitval helpen voorkomen. Daarmee wordt tegelijkertijd de overheidsbekostiging voor een student behouden in plaats van dat deze verloren gaat wanneer een student uitvalt. Op instellingsniveau dienen dan ook niet alleen de kosten, maar ook de opbrengsten van studieloopbaanbegeleiding te worden gemonitord aangezien publieke middelen op verschillende wijze kunnen worden aangewend om studie-uitval te voorkomen. Dit onderzoek bekijkt daarom niet alleen vanuit een onderwijskundige hoek, maar ook vanuit een financiële hoek de effectiviteit van studieloopbaanbegeleiding om daarmee de financiële impact van studieloopbaanbegeleiding in het Nederlandse hoger beroepsonderwijs te verduidelijken.

Dit onderzoek bestudeert de effectiviteit van studieloopbaanbegeleiding in zowel onderwijskundig als financieel opzicht aan de hand van vier empirische studies. Deze studies richtten zich achtereenvolgens op de invloed van studieloopbaanbegeleiding op studie-uitval, studiesucces en studiemotivatie, waarbij de vierde studie zich richtte op de potentiële financiële opbrengsten van studieloopbaanbegeleiding. In dit onderzoek staan (in volgorde van de vier empirische studies) de volgende onderzoeksvragen centraal:

1. Brengt studieloopbaanbegeleiding *eerstejaarsuitvalpercentages* omlaag? En hoe kan de invloed van studieloopbaanbegeleiding op *eerstejaarsuitval* worden verklaard, rekening houdend met andere bekende invloeden op *studie-uitval* als groei van de instroom, bindend studieadvies, geslacht, vooropleiding en switchgedrag van studenten?
2. Heeft studieloopbaanbegeleiding een significante invloed op *eerstejaars studiesucces*, rekening houdend met andere bekende invloeden als vooropleiding, faculteit en geslacht? En zo ja, op welke wijze beïnvloedt studieloopbaanbegeleiding dan *eerstejaars studiesucces*?
3. Heeft *eerstejaars studiemotivatie* profijt van studieloopbaanbegeleiding, rekening houdend met andere bekende invloeden als geslacht, leeftijd, vooropleiding en de studiemotivatie bij aanvang van de opleiding? En hebben verschillen in studieloopbaanbegeleidingsarrangement invloed op *eerstejaars studiemotivatie*?
4. In welke mate zou de studie-uitval moeten worden gereduceerd om als instelling een positieve *opbrengst uit investeringen* in studieloopbaanbegeleiding te behalen?

De vier empirische studies zijn uitgevoerd bij Christelijke Hogeschool Windesheim (hierna Windesheim), een middelgrote Nederlandse hogeschool die in 2006 een nieuw, vraaggestuurd onderwijsconcept invoerde. Sinds 2006 verwierven alle studenten van Windesheim een extra, elfde competentie genaamd 'zelfsturing

op opleiding en loopbaan', die was toegevoegd aan de tien kerncompetenties van het competentiegerichte Nederlandse hoger beroepsonderwijs. Om deze elfde competentie te verwerven volgden studenten ieder studiejaar van hun opleiding het vak Studieloopbaanbegeleiding, dat met een jaarlijkse studielast van 4 studiepunten (ECTS-credits) erop gericht was om studenten met de benodigde houding en vaardigheden uit te rusten om zelf op bachelorniveau hun eigen studieloopbaan vorm te kunnen geven. Docenten werden voor het geven van dit vak in tijd gefaciliteerd om deze extra taak uit te voeren, evenals de taak van supervisie en toetsing van studieloopbaanbegeleiding. Door studieloopbaanbegeleiding in het curriculum op te nemen stelde Windesheim zich ten doel om de instellingsuitval vanaf 2007 jaarlijks met gemiddeld ten minste 15 procent te laten dalen.

De eerste empirische studie, zoals beschreven in *hoofdstuk 2*, was erop gericht om de invloed van studieloopbaanbegeleiding op eerstejaarsuitval vast te stellen. In de verwachting dat het integrale systeem van studieloopbaanbegeleiding op Windesheim studenten zou helpen bij het bereiken van hun doelen en hen voor studie-uitval zou behoeden, onderzocht deze kwantitatieve studie op instellingsniveau de trend in eerstejaarsuitval van de cohorten 2000 tot en met 2008. Tevens werd de invloed van studieloopbaanbegeleiding en andere bekende voorspellers van studie-uitval onderzocht.

Als gevolg van meerdere contextuele factoren die studie-uitval beïnvloedden vond deze eerste studie geen onomstotelijk bewijs dat studieloopbaanbegeleiding de eerstejaarsuitval van Windesheim omlaag bracht. Allereerst werd Windesheim tussen 2000 en 2008 geconfronteerd met een overweldigende groei van de instroom, die tot een toename van de eerstejaarsuitvalpercentages geleid zou kunnen hebben. Daarnaast verliet een toenemend aantal eerstejaars studenten Windesheim door binnen het Nederlandse hoger onderwijssysteem te switchen naar een andere Nederlandse instelling voor hoger onderwijs. Op basis van een gelijkblijvende systeemuitval van Windesheim hadden eerstejaars studenten van Windesheim kennelijk baat bij studieloopbaanbegeleiding, niet door ze voor uitval op Windesheim te behoeden maar door te voorkomen dat ze het Nederlandse hoger onderwijssysteem verlieten. Tegelijkertijd bleek de introductie van studieloopbaanbegeleiding echter minder succesvol dan Windesheim had gehoopt. Studenten hadden met name graag meer individuele reflectie gedurende hun eerste jaar gehad willen hebben, in het bijzonder in relatie tot hun studievoortgang.

De tweede empirische studie, zoals beschreven in *hoofdstuk 3*, onderzocht studieloopbaanbegeleiding in termen van het verbeteren van studiesucces. Met als doel om vast te stellen of studieloopbaanbegeleiding een significante invloed op eerstejaars studiesucces had, betrof deze kwantitatieve studie een cohortanalyse van het gemiddeld aantal behaalde studiepunten aan het eind van het eerste jaar. Om alternatieve verklaringen uit te sluiten controleerde deze studie voor mogelijke storende invloeden van andere bekende voorspellers van studiesucces.

In deze studie naar studiesucces voldeed studieloopbaanbegeleiding aan de veronderstelde verwachting door studenten te helpen hun studie in het eerste jaar voort te zetten. De resultaten van deze studie lieten zien, dat eerstejaars voltijdstudenten van Windesheim meer studiepunten behaalden in het competentiegericht onderwijsstelsel waarin ze vanaf 2006 werden begeleid om sturing te geven aan hun eigen loopbaan. Daarnaast behaalden studenten die hun eerste jaar afronden niet alleen meer studiepunten nadat studieloopbaanbegeleiding in 2006 was ingevoerd, maar haalden zij tegelijkertijd, in vergelijking tot studenten die in het eerste halfjaar uitvielen, hogere cijfers voor het eerst behaalde vak. Samengevat lieten de resultaten van deze studie duidelijk een significant positieve invloed van studieloopbaanbegeleiding op het studiesucces van Windesheim zien. In de zoektocht naar mogelijke storende invloeden van andere bekende voorspellers van studiesucces kon geen storende invloed van de vooropleiding op het eerstejaars studiesucces worden aangetoond, aangezien het vooropleidingsniveau zich in de tijd gezien stabiel ontwikkelde. De implementatie van de bachelor-masterstructuur in 2006, samenvallend met de invoering van vraagsturing binnen Windesheim, kan het toegenomen studiesucces tot op zekere hoogte echter alternatief verklaard hebben.

De derde empirische studie, zoals beschreven in *hoofdstuk 4*, maakte gebruik van een kwantitatieve benadering om de invloed van studieloopbaanbegeleiding op eerstejaars studiemotivatie vast te stellen. Op basis van een, door alle eerstejaars studenten van Windesheim ingevulde reeks van vragenlijsten op het terrein van competenties, vaardigheden, leerstijl en toekomstige beroepskeuze richtte deze studie zich in het bijzonder op de beweegredenen die eerstejaars studiesucces versterkten. Op basis van incidenteel onderzoek dat een motivatieverlies onder eerstejaars studenten moderne vreemde talen van twee grote Engelse universiteiten liet zien, verwachtte deze studie een afname van intrinsieke studiemotivatie gedurende het eerste studiejaar.

Op het niveau van de drie onderzochte opleidingen als geheel liet deze studie geen versterkende invloed van studieloopbaanbegeleiding op eerstejaars studiemotivatie zien. Echter, op het niveau van individuele opleidingen constateerde deze studie voor twee (van de drie) opleidingen en voor twee (van de vier) motivatieschalen een significant positieve invloed van studieloopbaanbegeleiding op eerstejaars studiemotivatie. Bovendien verklaarde de focus op studentreflectie mogelijk de verschillen tussen de opleidingen met betrekking tot de positieve invloed van studieloopbaanbegeleiding op eerstejaars studiemotivatie. Studentreflectie speelde derhalve een onverwacht grote rol in eerstejaars studieloopbaanbegeleiding.

De vierde empirische studie, zoals beschreven in *hoofdstuk 5*, concentreerde zich op de kosten en baten van studieloopbaanbegeleiding als een middel om als instelling in het Nederlandse hoger beroepsonderwijs uitval te voorkomen en afstuderen te bevorderen. Deze studie presenteerde een model om te berekenen in welke mate de studie-uitval zou moeten dalen om als instelling een positieve opbrengst uit investeringen in studieloopbaanbegeleiding te behalen. De basis voor dit model betrof een kwantitatieve break-evenanalyse, waarin de totale kosten van studieloopbaanbegeleiding werden afgezet tegen de potentiële baten van studieloopbaanbegeleiding.

Als gevolg van de instelling van parameters, zoals gekozen in het model, kwam uit deze vierde en laatste empirische studie een laag aantal van 14 studenten naar voren als break-evenpoint van studieloopbaanbegeleiding op Windesheim. Anders gezegd waren de potentiële baten van studieloopbaanbegeleiding groter dan de kosten van studieloopbaanbegeleiding op het moment dat 14 of meer studenten dankzij studieloopbaanbegeleiding voor studie-uitval werden behoed. Omgerekend naar een daling van eerstejaarsuitvalpercentage van de drie opleidingen in kwestie waren de potentiële baten van studieloopbaanbegeleiding groter dan de kosten van studieloopbaanbegeleiding vanaf een daling van het eerstejaarsuitvalpercentage met afgerond 2,3 procent. In vergelijking tot het gemiddelde eerstejaarsuitvalpercentage van onderzoekcohort 2008 van de drie opleidingen in kwestie (i.c. 33 percent) kon de benodigde daling in eerstejaarsuitval met 2,3 procent, om daarmee de kosten van studieloopbaanbegeleiding terug te verdienen, als haalbaar worden beschouwd. De centrale vraag van deze studie, of studieloopbaanbegeleiding van Windesheim de investering waard is, werd daarmee dan ook bevestigend beantwoord.

In *hoofdstuk 6* worden de resultaten van de verschillende studies bijeen gebracht en van reflectie voorzien. De algehele conclusie daarvan is, dat studieloopbaanbegeleiding van Windesheim resulteerde in positieve onderwijskundige effecten op eerstejaars studiesucces en op eerstejaars studiemotivatie, die door eerder onderzoek werden bevestigd. Bovendien hadden eerstejaars studenten blijkbaar baat bij studieloopbaanbegeleiding, niet door ze voor uitval op Windesheim te behoeden maar door te voorkomen dat ze het Nederlandse hoger onderwijsstelsel verlieten. Tot slot liet een break-evenanalyse van studieloopbaanbegeleiding zien, dat de benodigde daling in eerstejaarsuitval, om daarmee de kosten van studieloopbaanbegeleiding terug te verdienen, als haalbaar kon worden beschouwd. Daarmee kon dan ook worden geconcludeerd dat studieloopbaanbegeleiding in financieel opzicht de investering van Windesheim waard was.

Aanvullend bespreekt *hoofdstuk 6*, naast een aantal theoretische en praktische implicaties, de beperkingen van dit onderzoek en worden suggesties voor vervolgonderzoek gedaan. Tevens benadrukt dit hoofdstuk de risico's waarop hoger onderwijsinstellingen zich zorgvuldig zouden moeten voorbereiden in het geval van ingrijpende onderwijs hervormingen, zoals de invoering van studieloopbaanbegeleiding op Windesheim in 2006. Deze risico's waren een belangrijke bron van inspiratie voor het onderhavige onderzoek naar de onderwijskundige en financiële invloeden van studieloopbaanbegeleiding op Windesheim. Tijdens het onderzoek naar deze invloeden bleken de effecten van studieloopbaanbegeleiding op het eerstejaars studiesucces aanmerkelijk complexer dan gedacht. Daarmee is de meerwaarde van dit onderwijskundig-financiële onderzoek zoals gerapporteerd in dit proefschrift dan ook tweeledig. In de situatie waarin een instelling van plan is het onderwijsbeleid te herzien of een onderwijs hervorming te starten, kan - of misschien wel moet - gelijksoortig onderzoek vooraf een zeer belangrijke rol spelen in een tijdige inschatting van de mogelijke consequenties van deze veranderingen. En, last but not least, in geval van een lopende onderwijs hervorming kan - of misschien wel moet - gelijksoortig onderzoek een essentiële rol spelen in het onderzoek naar de effecten van deze hervorming, zowel tussentijds als naderhand.

Dankwoord

(Acknowledgements in Dutch)

*I've been drivin' all night,
my hand's wet on the wheel*

De start van mijn 'night of the prom(otie)s' was op 17 april 2007, toen ik de stoute schoenen aantrok door een brief te schrijven aan Jos Beishuizen, destijds werkzaam als hoogleraar-directeur van het VU-Onderwijscentrum. In deze brief deed ik Jos het verzoek in gesprek te gaan over mijn research proposal, waarin de studie-uitval in de context van het vraaggestuurde hoger beroepsonderwijs van Windesheim centraal stond. Geïnspireerd door het College van Bestuur van Windesheim, dat in de begroting van 2007 had aangegeven van de structurele inzet van studieloopbaanbegeleiding een uitvaldaling van ten minste 15% per jaar te verwachten, wilde ik graag gaan onderzoeken in hoeverre deze uitvalreductie met studieloopbaanbegeleiding te realiseren zou zijn.

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voor mij persoonlijk tot een onvergetelijke dag te maken.

Nu uiteindelijk de finish in zicht is en het ochtendgloren zich aandient hoop ik dat Golden Earring nog lang het wervelende geluid van Radar Love ten gehore zal blijven brengen. Mede door de tomeloze energie en het grote voorbeeld van doorzettingsvermogen en saamhorigheid van Neerlands beste rockband aller tijden ben ik geïnspireerd gebleven om met beide handen aan het stuur deze finish te bereiken.

About the author

Mark te Wierik (1971) was born in Raalte (Overijssel), the Netherlands. After finishing pre-university education, he headed towards the University of Groningen to study Business Economics. At the end of this study, he moved to The Hague to do an extra half-year internship at the Dutch Ministry of Finance. In 1995, he obtained a Master's degree majoring in the field of Management and Organization.



In his early career, he worked as a controller in Dutch furniture retail, in Dutch wholesale food and grocery and in global container lifting industry respectively. In 2003, he changed his career to Dutch higher vocational education at Windesheim University of Applied Sciences (UAS) in Zwolle. After a couple of years as a controller at the department of Finance and Control, he joined the Professional Staff to the Board of Governors in 2007 to focus on corporate planning and control of Windesheim UAS. At the same time, he started his part-time PhD project investigating the influence of vocational career guidance on first-year student success at Windesheim UAS. As from 2011, he extended his knowledge by exploring the field of strategic Human Resource Management at the department of Personnel Services & Organizational Development of Windesheim UAS. Subsequent to this PhD-thesis on first-year student success, he is from 2014 a senior policy advisor and researcher Student success at both Windesheim Zwolle and Windesheim Flevoland in Almere (being an auxiliary branch of Windesheim UAS since 2010).

Beside his appointment at Windesheim UAS, Mark holds additional positions in primary education and banking industry in his hometown Meppel. In particular, he is a member of the Supervisory Board at Stichting PCBO Meppel. Furthermore, he is a member of the General Meeting (Ledenraad) at the Rabobank Meppel-Staphorst-Steenwijkerland. Last but not least, he is and will ever be a dedicated fan of the most famous and peerless Dutch rock band Golden Earring.

