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## Vocational career guidance in Dutch higher vocational education

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2018

### **document version**

Publisher's PDF, also known as Version of record

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### **citation for published version (APA)**

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

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## **Chapter 6**

# **Discussion**

**6**

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 Aniel (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 Aniel 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.c. 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.c. 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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