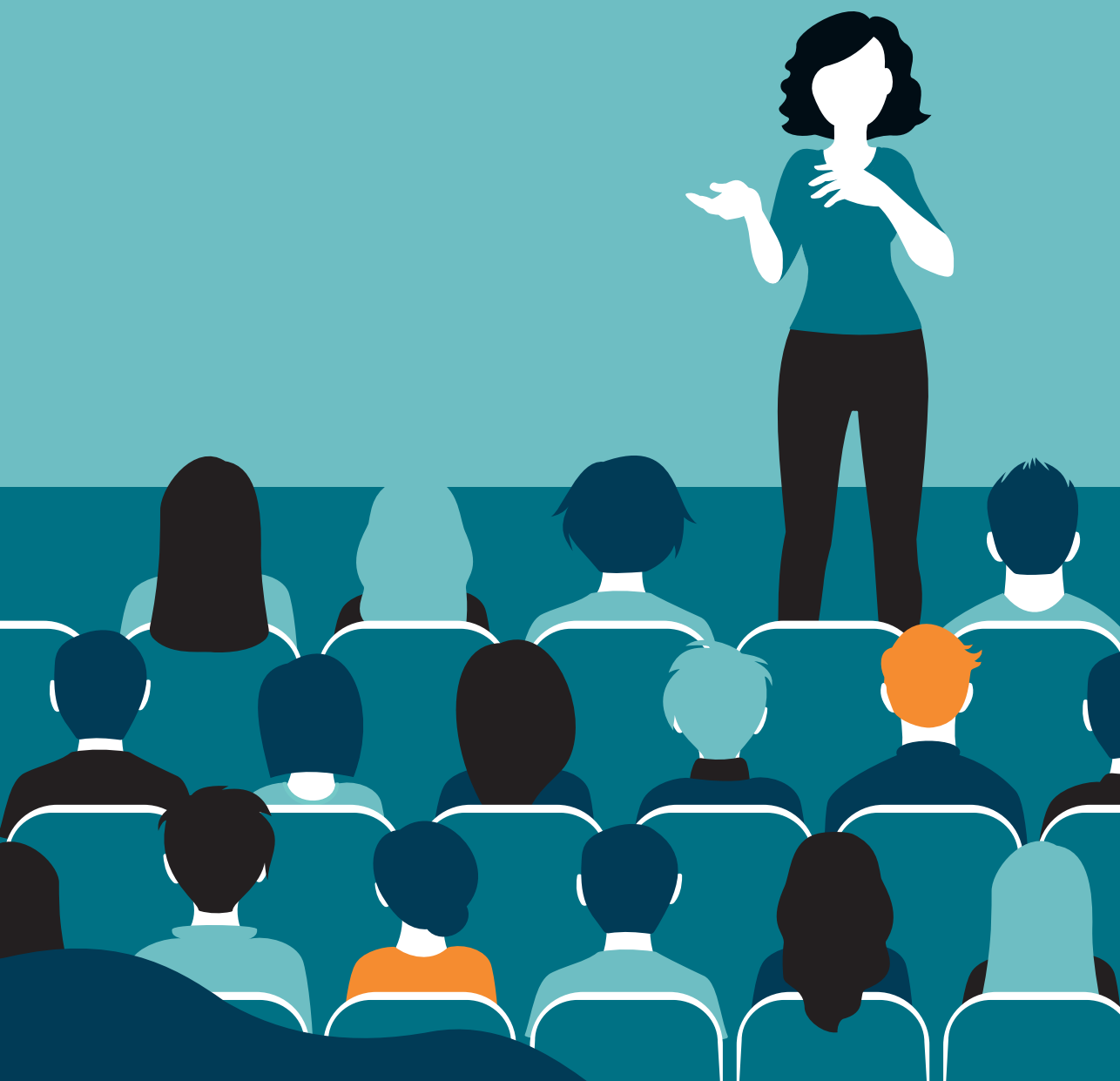
Fostering Oral Presentation Competence in Higher Education

Stan van Ginkel



Propositions

1. To successfully encourage students' oral presentation competence in tertiary education, curriculum designers need to take learning environment characteristics, such as learning tasks, behaviour modelling and feedback, into consideration.
   (this thesis)

2. The comprehensive set of educational design principles for teaching oral presentation competence, presented in this thesis, is sufficiently generic to apply on other 21st century skills, such as problems solving, scientific writing, argumentation or negotiation skills.
   (this thesis)

3. The global teacher shortage can be solved by the involvement of Artificial Intelligence.

4. Virtual Reality will become an essential tool for talent recruitment of tomorrow.

5. Doing a PhD in another domain than one's Master's Degree is like exploring new areas for a human geographer.

6. Constructing experiments in social sciences is comparable to writing music.

Propositions belonging to the thesis, entitled

Fostering Oral Presentation Competence in Higher Education.

Stan van Ginkel
Wageningen, 23 October 2019

Fostering Oral Presentation Competence in Higher Education

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Fostering Oral Presentation Competence in Higher Education

Stan van Ginkel

Thesis

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Chapter 1

General Introduction

1.1 Introduction

Presenting is perceived as one of the core competencies of the higher educated professional (Campbell, Mothersbaugh, Brammer, & Taylor, 2001; Hinton & Kramer, 1998; Kerby & Romine, 2009). Within this PhD-thesis, professional competence is regarded as an overarching concept of being a competent professional that entails a range of underlying competencies needed for every professional irrespective of domain. One of these competencies concerns communication competence (Mulder, 2014). This competence is being perceived as a combination of knowledge, skills and attitudes required to interact with others in a certain situation (e.g. Rubin, Rubin, & Jordan, 1997). Besides other crucial communication competencies, such as argumentation and negotiation competencies, being able to give oral presentations (oral presentation competence) is an essential component of communication competence (Mulder, 2014; Mulder & Winterton, 2017). This ability to communicate serves as a prerequisite for effective performance in varying working environments (e.g. Dunbar, Brooks, & Kubicka-Miller, 2006; Fallows & Steven, 2000; Smith & Sodano, 2011), career success and for effective communication in democratic societies (e.g. Chan, 2011; Hinton & Kramer, 1998). Oral presentation competence is declared by educational policy makers as a primary qualification of higher educated graduates. Evidence for this is traceable in the Dublin Descriptors referring to 'communicating' as one of the five higher education qualifications that all higher educational institutions are required to adopt (e.g. Joint Quality Initiative, 2004; Washer, 2007). The competence to present, which is a component of the descriptor 'communicating', entails the capacity of students to present information to an audience (Joint Quality Initiative, 2004). In other words, this presentation competence concerns the transmission of a message from the sender to the receiver in a certain context (Haber & Lingard, 2001).

However, employers irrespective of domain or sector emphasized that young professionals often fail to acquire public speaking capabilities (Chan, 2011). Further, this competence is frequently regarded by individuals as a dominant fear in social contexts (Smith & Sodano, 2011). Moreover, besides the essence of communicating in professional life, students regularly underestimate the amount of time professionals spend on meetings and other forms of communication (Chan, 2011). Therefore, specific attention is required as to the design of educational programs to develop oral presentation competence.

Previous research in this field showed a fragmented picture of effective learning environment characteristics that foster oral presentation competence (De Grez, Valcke, & Roozen, 2009b). In order to design both effective as well as efficient learning environments for developing this

competence in the context of higher education, a more systematic and comprehensive perspective on instructional approaches for oral presentation competence development is needed that address the instruction, learning and assessment strategy sides of the learning environment (e.g. Biggs, 1996; De Grez et al., 2009b). Therefore, this PhD project focuses, first, on the following research question: *What characterizes a comprehensive learning environment for developing oral presentation competence in the context of higher education?* Before further exploring this question in the next Chapter, in this Chapter, oral presentation competence will be defined (see section 1.2), more insights into the development of this competence in higher education curricula will be provided (see section 1.3) and the problem statement of this project is explained (see section 1.4). Further, the research aims and research questions of the various studies of this project (see section 1.5) are discussed followed by an overview of the Chapters in this dissertation (see section 1.6).

1.2 Defining oral presentation competence

Oral presentation competence in this research field can be defined as: *"the combination of knowledge, skills, and attitudes needed to speak in public in order to inform, self-express, to relate and to persuade"* (De Grez, 2009, p. 5), which is equal to the conceptualization of the construct of oral presentation competence (Mulder, 2014; Mulder & Winterton, 2017) adopted in this PhD project. Taking this definition into consideration, an important notion regarding the concept of oral presentation competence is the interrelatedness of the cognitive, behavioural and affective domains (Bower, Cavanagh, Moloney, & Dao, 2011). Students' presentation performance can be fostered or restrained by any or all of the three components referring to cognition, behaviour and attitude towards presenting. For example, if presenters develop knowledge about how to present, their skills may be improved, which, as a consequence, may encourage their eagerness to speak in public (Bower et al., 2011, p. 313; Mulder & Winterton, 2017). Therefore, to construct effective presentation curricula in higher education, the cognitive, behavioural and affective components of oral presentation competence should all be included in the learning environment. In this research project, oral presentation competence is operationalised by assessing students' performance on cognition, behaviour and attitude towards presenting (see also Chapter 3). First, cognition towards presenting is defined as students' knowledge about the main criteria for presentations (content of the presentation, structure of the presentation, presentation delivery aspects and interaction with the audience). Second, presentation behaviour is formulated as students' observed presentation performance on these main criteria for conducting presentations. Thirdly, attitude towards presenting is regarded as students' self-perceived level of challenge, motivation and relevance of conducting a presentation.

1.3 Fostering oral presentation competence in higher education

Giving presentations is perceived by educators as a complex ability to develop (e.g. Kaye, 1994; Morreale, Hackman, Ellis, King, Meade, & Pinello-Tegtmeier, 1993). However, acquiring oral presentation competence has been increasingly facilitated in a wide range of academic disciplines, such as Biology, Business, Communication, Engineering and Health (Dunbar et al., 2006). In line with this, many higher education institutions around the globe integrated oral presentation courses into their curricula (Cooper, 2005; Morreale, Hugenberg, & Worley, 2006). Though, several researchers focusing on interventions to foster oral presentation competence in higher education concluded that graduates often lack the competence to speak in public after finishing their educational programs (e.g. Lea & Street, 1998; Lowe & Cook, 2003; Ozga & Sukhnandan, 1998). This conclusion holds for accounting, business, medical and technical professionals (e.g. Grace & Gilsdorf, 2004; Kerby & Romine, 2009; Pittenger, Miller, & Mott, 2004). Therefore, more attention to teaching oral presentation competence in higher education is needed (e.g. Alshare & Hindi, 2004; Hay, 1994; Mulder, Gulikers, Biemans, & Wesselink, 2010).

For developing this competence in tertiary education, teachers and curriculum designers first need to understand the essence of fostering students' progress in oral presentation competence (Chan, 2011). Since many teachers and curriculum designers are 'domain-oriented' instead of 'competence-oriented', overcoming the lack of willingness and confidence to encourage such a competence and finding the time and space in curricula to incorporate public speaking may be difficult (Chan, 2011). Furthermore, encouraging oral presentation competence is regularly considered as a time-consuming activity (e.g. Chan, 2011; De Grez et al., 2009a). This consideration fails to match the current trend in higher education to reduce in-class instruction time (De Grez, 2009). The latter increases the pressure to optimize the instructional environment and to adopt evidence-based alternative approaches to instruction (De Grez et al., 2009a, p. 293). This challenge to optimize the learning environment is further strengthened by the pressure on curricula in higher education to encourage student performance related to several other academic competencies next to oral presentation competence, such as argumentation, negotiation and writing abilities, in limited time (e.g. Chan, 2011; Pittenger et al., 2004; Young & Murphy, 2001). Besides learning from instruction, observational learning and learning by doing (f.e. Bandura, 1986; Mulder & Winterton, 2017), other approaches might have an essential impact on developing students' presentation competence in higher education as well. For example, peer feedback, self-assessment or innovative technologies for delivering feedback are frequently emphasized and researched in other related research fields such as fostering

academic writing skills or argumentation skills (e.g. Hattie & Timperley, 2007; Lea & Street, 1998; Noroozi, Weinberger, Biemans, Mulder, & Chizari, 2012; Shute, 2008). Arguments for the potential impacts of learning environment characteristics, such as peer feedback, self-assessment and innovative technologies for delivering feedback, on students' oral presentation competence are embedded in theories encompassing reflective, active and collaborative learning (e.g. Biggs, 1996; Falchikov, 2005; Hattie & Timperley, 2007). In short, the design of oral presentation courses in higher education requires an effective (achievement of pre-defined learning outcomes) and efficient (limited use of resources such as teaching time and budget) approach (e.g. Chan, 2011; Pittenger et al., 2004).

1.4 Problem Statement

The field of presentation research demonstrates an incomplete and fragmented picture of the relationships between characteristics of the learning environment and students' oral presentation competence or components thereof (e.g. Campbell et al., 2001; Carlson & Smith-Howell, 1995; De Grez et al., 2009a; Hughes & Large, 1993; Voth & Moore, 1997). Previous studies examined specific learning environment characteristics for developing oral presentation competence, as objects of study, simultaneously or in isolation. These learning environment characteristics are the role of videotaped feedback (Bourhis & Allen, 1998), the use of a public speaking portfolio (Jensen & Harris, 1999), the impact of placement, pace and preparation (Bayless, 2004), the role of service-learning (Tucker & McCarthy, 2001) and the optimal number of in-class presentations (Calcich & Weilbaker, 1992). Effect studies on developing oral presentation competence present contradictory results (De Grez, 2009). For example, Bourhis and Allen (1998) summarize findings of the influence of videotaped feedback on students' oral presentation performance and revealed positive effects, whereas Hinton and Kramer (1998) found limited support for this relationship. In addition, several conclusions are based on studies using non-experimental research methods, containing surveys, interviews and observations. In studies by Bayless (2004) as well as Grace and Gilsdorf (2004), for example, changes in oral presentation performance are not supported by experimental study designs.

As a comment on the studies described here, the research reported in this dissertation departs from the premises that instead of studying one or more characteristics of the learning environment, as previous studies did, researchers should link their findings to what is needed to develop effective and efficient learning environments for oral presentation competence acquisition. Further, Bower et al. (2011), as well as Brown and Morrissey (2004), claim that there is little pedagogical design focused on developing students' oral presentation competence

and there is hardly any philosophy underpinning it. Besides central concepts, such as behaviour modelling and feedback, additional characteristics of the learning environment, such as the learning task, peer assessment and innovative technologies for delivering feedback, are needed to describe what is needed in a learning environment for developing presentation competence (De Grez, 2009). Based on several studies, De Grez et al. (2009a) conclude that a comprehensive perspective and systematic approach are required (De Grez et al., 2009a, p. 302; De Grez et al., 2009b) in further research on oral presentation competence development for the following two reasons. First of all, researchers should link effective learning environment characteristics for developing oral presentation competence to the instruction, learning and assessment strategy, as previously argued by Biggs (1996) regarding the notion of 'constructive alignment'. Secondly, these learning environment characteristics should encourage cognition towards presenting, the actual presentation behaviour and attitude towards presenting, as earlier emphasized concerning the construct of competence (Mulder, 2014). The outcome of research, starting from the perspective of aligning key areas of course design and encouraging the three mentioned components of oral presentation competence, might help to construct and formulate crucial design principles for developing this competence which could facilitate future empirical studies aiming to refine these principles.

In order to identify and classify key characteristics of effective learning environments for oral presentation competence development into a comprehensive theoretical framework, a systematic literature study is needed. Therefore, a review, as first part of this research project, is aimed at synthesizing previous studies into a comprehensive set of evidence-based and well-argued design principles for fostering oral presentation competence in higher education.

1.4.1 Developing oral presentation competence by learning from feedback

After identifying seven design principles for a comprehensive learning environment fostering oral presentation competence (in Chapter 2), follow up studies in this thesis focus on feedback. Feedback is a characteristic that is at the heart of three of the seven identified design principles, it is of major influence on learning and achievement (Hattie & Timperley, 2007), and receives increasing attention in higher education research (Pereira, Flores, & Niklassen, 2015). Also in the field of oral presentation competence research a number of publications highlight feedback as a critical learning environment characteristic (e.g. De Grez et al., 2009a; De Grez et al., 2009b; Mitchell & Bakewell, 1995). According to De Grez (2009), giving and receiving feedback play an essential role in the learning cycle of acquiring complex behaviour, such as developing oral presentation competence.

Further, focusing on feedback could clarify how learning environments for developing oral presentation competence can be made more efficient in terms of instructional time. More insights into feedback processes could reveal whether peers could replace the function of teachers in providing feedback or whether teacher feedback could be substituted by innovative technologies for delivering feedback. As such, studying feedback as part of a comprehensive learning environment for fostering oral presentation competence, can help to make these learning environments both effective and more efficient.

Although feedback is one of the major influences on learning and achievement, the type of feedback and the way it is provided can be effective in different ways (Hattie & Timperley, 2007). Building on a broader theory about feedback (Falchikov, 2005; Hattie & Timperley, 2007), evidence from previous studies in this field showed positive effects of any kind of feedback on oral presentation performance over no feedback at all (Mitchell & Bakewell, 1995; Smith & King, 2004). Specifically in the context of higher education, Dochy, Segers and Sluijsmans (1999) explored the use of co-, peer and self-assessment in higher education settings, and Nicol and MacFarlane-Dick (2006) elaborated a set of principles for good feedback in these contexts. However, despite several studies provided theoretical arguments and empirical evidence for the importance of feedback by the teacher (Kerby & Romine, 2009; Mitchell & Bakewell, 1995; Smith & King, 2004), the peer (Cheng & Warren, 2005; Mitchell & Bakewell, 1995; Topping, 1998) or the self (Bourhis & Allen, 1998; Bower et al., 2011; Jensen & Harris, 1999), it remains unclear whether the development of students' oral presentation competence, during the phase in which most progress can be expected - that is between the first and the second presentation - (Calcich & Weilbaker, 1992), differs depending on the specific feedback source (De Grez, Valcke, & Roozen, 2009). Therefore, in the first empirical study of this PhD project, the aim is to examine the effectiveness of commonly used feedback sources, that is, the teacher, the peer and the self, on students' oral presentation competence development, as indicated by cognition (knowledge of presenting), behaviour (presentation skills) and attitudes (attitude towards presenting), in a higher education setting.

In the context of this PhD-thesis, Chapter 3 reveals that teacher feedback is superior to develop students' oral presentation performance over other commonly used feedback sources such as peers, peers guided by tutors and feedback from the self. In order to trace arguments for these findings, Chapter 4 focuses on the quality of the feedback provided by these sources. Regarding the findings in Chapter 3, it remains questionable whether feedback provided by teachers is of higher quality as well. Previous studies in the field of presentation research failed to reveal insights in the quality of feedback provided by commonly used feedback sources in higher

education (e.g. Mitchell & Bakewell, 1995; Topping, 1998; see Chapter 4). In line with this, it remains unclear to what extent feedback quality, in terms of content and form, potentially differs between teachers, peers or peers guided by tutors (Boud & Molloy, 2013). Investigating the underlying feedback processes of commonly adopted feedback sources, and more specifically that of teachers, could encourage the optimisation of peer feedback in future presentation skills courses. For optimizing learning environments fostering oral presentation competence, feedback is an essential component and therefore important to construct in an effective and efficient manner within this context. In line with this, more knowledge is required on how teachers and peers provide their feedback, on what aspects they focus and to what extent their feedback processes are related to theoretical and empirical insights of feedback quality criteria. In-depth analyses of feedback processes of teachers could reveal essential elements for the design of effective peer-assessment training. Further, insights in the way feedback sources deliver their feedback could reveal possibilities to create more efficient learning environments for developing oral presentation competence as well. As described in Chapter 3, teacher feedback is superior and effective, however, not necessarily efficient. Current trends in higher education demonstrate pressure in terms of decreasing opportunities for teacher feedback when class size increases, teaching staff become overloaded and possibilities for teacher-student interactions diminish (De Grez et al., 2009a; Boud & Molloy, 2013). Within this thesis, the second empirical study (Chapter 4) focuses on the analysis of feedback provided by commonly used feedback sources in higher education, such as the teacher, peers and peers guided by tutors.

Besides feedback provided by commonly used feedback sources, the role of technology for both practicing presentations and facilitating high-quality feedback is scarcely mentioned in previous presentation research (see Chapter 2). Only a few studies integrated technologies in the form of videotaping students' individual presentations for encouraging self-assessment, developing reflection skills and fostering students' oral presentation competence (e.g. Bower et al., 2011; Hinton & Kramer, 1998). However, researchers argued that innovative technologies, such as virtual reality-based tasks, have potential for developing students' competencies, since interactive digital learning environments can imitate real-life processes and facilitate the provision of feedback (e.g. Coller & Scott, 2009; McNamara, Jackson, & Graesser, 2009; Merchant, Goetz, Cifuentes, Keeney-Kennicutt, & Davis, 2014). Virtual reality tools, combining practicing presentations in front of a virtual audience and receiving feedback generated by the computer system, could therefore be an interesting option for curriculum designers and policy makers in higher education willing to reduce teaching staff costs. Thus, for designing effective and efficient learning environments fostering oral presentation competence, more effective peer feedback is suggested in Chapter 3 as an interesting option. Chapter 4 provides insights for how such

effective peer feedback can be provided in this context. Another option is to experiment with delivering feedback based on conducting a presentation in virtual reality. Therefore, the third empirical study of this thesis aims to investigate the impact of a virtual reality-based task, in which students present in a virtual environment and receive feedback generated by the system, on students' cognition, skills and attitudes towards presenting. Furthermore, a goal of this study is to verify the extent to which students perceive such an innovative tool as valuable for practicing presentations and receiving feedback in developing oral presentation competence. This study also offers fruitful ideas for increasing the effectivity and efficiency of future learning environments for oral presentation competences.

Thus, in order to design both effective and efficient learning environments for developing students' presentation performance, specific research aims and related research questions were formulated for conducting both conceptual as well as empirical studies.

1.5 Research aims and research questions of the various studies

As stated in section 1.4, the aim of the first study of this thesis is to synthesize previously published fragmented studies into a set of evidence-based design principles for developing oral presentation competence in higher education. This review study, presented in Chapter 2, provides the foundations for further empirical studies in this field of study and aims to answer the following research question: *What characterizes a comprehensive learning environment for developing oral presentation competence in higher education?*

Since the review study proved that feedback is one of the crucial design principles for developing oral presentation competence, the research questions in the empirical studies focused on the impact and quality of feedback with the goal to further refine the formulated three design principles related to feedback (see Chapter 2, design principles 5, 6 and 7). The results of the following research question are presented in Chapter 3: *To what extent does the development of students' oral presentation competence differ depending on commonly used feedback sources in higher education?*

Although the study described in Chapter 3 explicitly links the feedback source to students' oral presentation competence development, still arguments for these relationships remain unclarified. Therefore, insights into the quality of the verbally provided feedback by commonly used feedback sources in higher education, such as teachers, peers and peers guided by tutors, could reveal why certain feedback sources differentially influence students' presentation performances.

The results of this study are presented in Chapter 4 based on the following research question: *To what extent does the quality of feedback, directly provided after undergraduate students' presentation performance, differ between commonly used feedback sources (i.e. teacher, peers, peers guided by tutor) in higher education?*

Where Chapter 3 and Chapter 4 focus on face-to-face and real life feedback to identify opportunities to adopt peer feedback or feedback from the self to make learning environments for developing oral presentation competence more effective and efficient, Chapter 5 examines feedback, delivered after a virtual reality-based task, as an alternative feedback source for optimizing such learning environments. The potential of virtual reality for developing students' cognition, skills and attitudes towards presenting are not yet researched. Furthermore, it is questionable whether virtual reality-based tasks could replace the role of the teacher in delivering feedback and potentially reduce teaching staff costs in the near future. The goals of this study are to investigate the impact of a virtual reality-based task on developing oral presentation competence and to examine the perceptions of students towards such an innovative tool. The results are elaborated in Chapter 5 guided by this research question: *What is the impact of a virtual reality-based task on developing students' oral presentation competence in higher education?*

Finally, in the last part of this thesis the overall conclusions are described and discussed. This Chapter opens with a summary of main findings, followed by discussing limitations related to methodological and theoretical issues of the thesis. While taking these limitations into consideration, the contributions of this thesis to the scientific community as well as for educational practice are formulated with the goal to construct an agenda for future research in this field of study within higher education. Furthermore, it is questioned to what extent the educational design principles for developing oral presentation competence constructed in this thesis could be applied to foster other academic and communication competencies.

1.6 Overview of the thesis

Starting from a general introduction of this thesis in Chapter 1, the second Chapter reports the construction of the educational design principles for developing oral presentation competence based on a systematic review study. Building on the principles that formatively assess students' presentation performances, several empirical studies are carried out adopting mixed methods of multiple-choice tests, rubrics, self-evaluations and videotaping for data collection. Chapter 3 focuses on the impact of the feedback source on developing oral presentation competence, while Chapter 4 describes the findings of analysing their related feedback processes. The last empirical

study about the potential impact of a virtual reality-based task on students' oral presentation competence is presented in Chapter 5. Finally, Chapter 6 describes the main findings of the studies. In that Chapter, limitations and implications of the results for theory and practice are discussed. Figure 1.1. presents an overview of the six Chapters. As shown in the figure, Chapter 1, 2 and 6 are overarching Chapters containing discussions of theory. In Chapters 3, 4 and 5, empirical studies are presented.

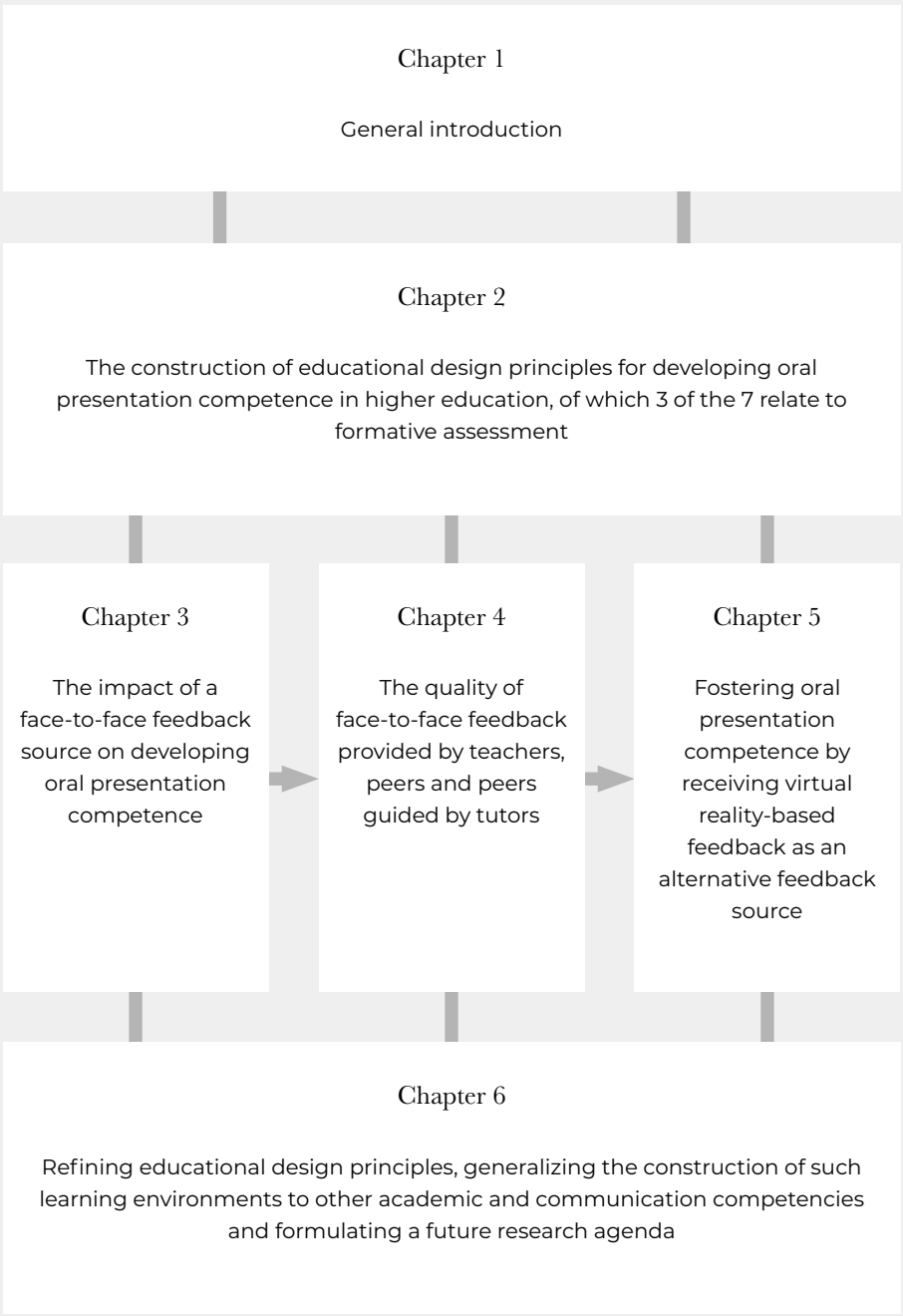

Figure 1.1 Representation of the Chapters within this dissertation

Chapter 2

Towards a Set of Design Principles for Developing Oral Presentation Competence: A Synthesis of Research in Higher Education

*This Chapter is based on:

Van Ginkel, S., Gulikers, J., Biemans, H., & Mulder, M. (2015). Towards a set of design principles for developing oral presentation competence: A synthesis of research in higher education. *Educational Research Review, 14*, 62-80. doi:10.1016/j.edurev.2015.02.002

Abstract

Developing oral presentation competence is an essential objective in higher education. However, a comprehensive picture of effective learning environment characteristics for encouraging oral presentation performance is lacking hitherto. This review identifies and classifies relevant studies with the aim of deducing a set of design principles with underlying conceptual and empirical argumentations for developing this competence. Fifty-two publications from the last 20 years were selected through a systematic search in four scientific databases. Subsequently, all studies were categorized with respect to student characteristics, learning environment characteristics, learning processes and outcomes. The synthesis of these studies resulted in the formulation of seven design principles, addressing the instruction, learning and assessment side of the learning environment. These design principles include the following learning environment characteristics: learning objectives, learning task, behaviour modelling, opportunity to practice, intensity and timing of feedback, peer assessment and self-assessment. Finally, an agenda for future research is discussed.

2.1 Introduction

Previous studies demonstrate an incomplete and fragmented picture of the relationships between characteristics of the learning environment and students' oral presentation performance (e.g. Campbell et al., 2001; Carlson & Smith-Howell, 1995; De Grez et al., 2009a; Hughes & Large, 1993; Voth & Moore, 1997). Bower et al. (2011) as well as Brown and Morrissey (2004) claim that there is little pedagogical design focused on developing students' communication competence and there is hardly any philosophy underpinning it. Besides central concepts such as behaviour modelling and feedback, additional concepts are needed to describe the impact of didactical interventions. Based on several studies, De Grez et al. (2009a) conclude that a systematic approach and comprehensive perspective are required in further research on learning approaches for oral presentation competence development (De Grez et al., 2009a, p. 302; De Grez et al., 2009b; De Grez, Valcke & Berings, 2010a; De Grez, Valcke & Berings, 2010b). Instead of examining one or several characteristics of the learning environment as previous studies did, design principles should address the instruction, learning and assessment side of the learning environment coin (Biggs, 1996). Based on the ideas of *constructive alignment* (Biggs, 1996), Biggs (2003) emphasizes the following key areas of the curriculum and courses that require alignment: 1) the instruction, 2) the learning activities and 3) the assessment strategy. The outcome of research, starting from the perspective of aligning key areas of course design, might help to develop better-suited theoretical frameworks to direct theoretical, empirical and practical intervention studies in the field of oral presentations (De Grez et al., 2009a).

2.1.1 Previous studies in this field

Previous studies examined specific learning environment characteristics for developing oral presentation competence, as objects of study, simultaneously or in isolation. These learning environment characteristics contain the role of videotaped feedback (Bourhis & Allen, 1998), the use of a public speaking portfolio (Jensen & Harris, 1999), the impact of placement, pace and preparation (Bayless, 2004), the role of service-learning (Tucker & McCarthy, 2001) and the optimal number of in-class presentations (Calcich & Weilbaker, 1992). Effect studies on developing oral presentation competence present contradictory results (De Grez, 2009). For example, Bourhis and Allen (1998) summarize findings of the influence of videotaped feedback on students' oral presentation performance and revealed positive effects, whereas Hinton and Kramer (1998) found limited support for this relationship. In addition, several conclusions are based on studies using non-experimental research methods, containing surveys, interviews and observations. In studies by Bayless (2004) as well as Grace and Gilsdorf (2004), for example, changes in oral presentation performance are not supported by experimental study designs.

In order to identify and classify key characteristics of effective learning environments for oral presentation competence development into a comprehensive framework, a systematic literature study is needed. Therefore, this review is aimed at synthesizing previous studies into a comprehensive set of well-argued design principles.

2.2 Review Method

This systematic review focuses on the identification and classification of characteristics of the learning environment, their effects and underlying arguments, for developing oral presentation competence in higher education. In order to synthesize data from previous studies with the aim of formulating a comprehensive set of design principles, consisting of characteristics of the learning environment, effects and arguments (Van den Akker, 1999), a systematic search was adopted. This study consisted of the following phases: the formulation of inclusion and exclusion criteria (Slavin, 1986), the development of a search strategy, the identification of relevant publications and the critical analysis and exploration to formulate design principles (Fink, 2010).

2.2.1 Formulation of criteria for inclusion

Four inclusion criteria were formulated. Firstly, the reported studies explicitly describe one or more characteristics of the learning environment and link these with students' oral presentation competence or components thereof (e.g. anxiety or self-efficacy regarding presenting). Secondly, specific studies published in higher education pertained to this review, since this educational context was the focus of the study. Thirdly, only peer-reviewed articles were included to obtain scientific fidelity. Finally, to provide an insight into recent scientific literature, the time span was restricted to publications from 1990 through 2012.

2.2.2 Development of a search strategy

The keywords used in a previous study of De Grez (2009), focusing on instruction for developing oral presentation skills in higher education contexts, were used as a starting point for this systematic review. After experimenting with the keywords "oral presentation skills" and "oral presentation competence" (as the dependent variable), the search yielded more than three hundred results. However, less than three percent of the traced publications were classified as relevant and useful in terms of the determined selection criteria, since the vast majority of these articles failed to specifically address the relationship between learning environment characteristics and components of oral presentation competence. To increase the effectiveness of the search strategy, the team of authors decided to strictly focus on keywords and synonyms for learning

environments (as independent variable) in combination with synonyms for oral presentation competence (as dependent variable) and the context of "higher education". Considering the independent variable, the following keywords were formulated: *teaching*, *pedagogy* and *learning*. The keywords examining the dependent variable were: *oral presentation competence*, *presentation competence*, *oral presentation skills*, *presentation skills* and *public speech*. Furthermore, to accentuate the relationship between the independent and dependent variable, the following action verbs were selected: d*evelop*, *improve*, *encourage*, *increase* and *enhance*. Additionally, the educational context was specified by adopting *higher education* in the search strategy. A variety of recognized computerized databases was searched in 2012, namely the Educational Resources Information Center (ERIC), Scopus, the Science Citation Index Expanded (SCI-EXPANDED), the Social Sciences Citation Index (SSCI), and the Arts & Humanities Citation Index (A&HCI), the latter three of which were provided by the Web of Science. Subsequently, the technique 'snowballing' was used, based on the reference lists of previously selected studies, to include additional relevant articles in this field.

2.2.3 Identification of relevant publications

This systematic search yielded 25 publications. After screening the abstracts, and if necessary the full text of the articles, publications were removed from the selection that (1) did not focus on developing presentation skills or competencies as the dependent variable. Furthermore, publications were excluded that (2) solely addressed the description of one or more teaching strategies without examining the effect on oral presentation skills or competencies. Finally, publications were removed that (3) purely focused on the relationship between student characteristics and oral presentation performance without taking certain learning environment characteristics into account.

The identification process was carried out by two researchers independently to guarantee the inclusion of relevant and exclusion of irrelevant publications, resulting in 15 included core publications at this stage. The overlap of the two researchers' decisions was sufficient (Cohen's Kappa= 0.89). The discrepancies were resolved through a focused discussion. In order to find additional relevant articles for this review study addressing the described relationship between the relevant variables, a snowball method was conducted in all 15 publications traced at this stage. This process resulted in another 37 publications in peer-reviewed journals to be included in the review. Initially, these later added publications were not part of the first yield, because of the search terms used related to the 'independent variable'. Synonyms for 'learning environment' in the search strategy of this review did not encompass certain specific characteristics of the learning environment in relevant publications, such as behaviour modelling or peer feedback.

Moreover, some snowball articles were published in peer-reviewed journals that were not traceable in the previously selected search engines, for example the work of Alshare and Hindi (2004) reflected in the *Journal of Computing Sciences in Colleges* and the article of Grace and Gilsdorf (2004) published in the *Journal of Accounting Education.* These publications reflected practically oriented approaches, but specifically appertain to the focus of this review study. An analysis of the yield of this search, based on the snowball method, showed that these publications adopted a wide variety of keywords for the learning environment (independent variable) and oral presentation competence (dependent variable). Including these keywords in a new systematic search revealed a comparable amount of results as in the initial search. Furthermore, no other relevant articles were found and added to the total of 52 selected articles for this review study. Thus, the snowballing technique supported the finding of other relevant studies focusing on the relationship between learning environment characteristics and oral presentation performance. Further, this review is not limited to empirical studies, since the intention was to support the results of the empirical studies with conceptual literature. Focusing on only the empirical studies could have yielded an incomplete picture of the diversity of learning environment characteristics. Therefore, such a decision could have resulted in a limited set of educational design principles for developing oral presentation competence in higher education.

2.2.4 Critical analysis and exploration

Of the 52 selected publications, 41 reported empirical studies, while 11 articles contained conceptual contributions. These conceptual publications focused mostly on contemporary teaching strategies used by teachers and researchers or described fundamental theories related to the topic of developing oral presentation competence in higher education (see Appendix A for a complete overview of all publications). The majority of the publications (36) studied the development of oral presentation competence in domain-specific educational settings, while 16 studies were carried out in specifically designed public speaking courses. Most articles were published in the domain of Business (16), since acquiring oral presentation competence is crucial for future business professionals (e.g. Brown & Morrissey, 2004; Kerby & Romine, 2009; Mitchell & Bakewell, 1995). Other domains, cited more than once, referred to Communication (8), Medicine (6), Multidisciplinary (6), Engineering (3), Geography (2), Food and Science and Human Nutrition (2) and Biology (2). Furthermore, Table 2.1 displays methodological data on the selected studies. Almost thirty-two of the reviewed publications were experimental or quasi-experimental studies, whereas two publications adopted a case-study design, and, another two entailed a review study. The majority (39) used quantitative methods to analyse the effects of one or more characteristics of the learning environment on students' oral presentation performance. Four publications used qualitative methods, e.g. interviews or observations, and

in one publication these were used in combination. With regard to the country of study, the majority of the studies have been conducted in North America, e.g. USA (34) and Canada (3). In addition, the European countries of study include: Belgium (4), United Kingdom (1), Scotland (1) and Ireland (1). Four publications were selected from Australia (4) and New Zealand (1). The other publications were traced from Hong Kong (2) and Saudi Arabia (1).

Based on a thorough exploration of the literature in this research field, no widely accepted framework models specifically focused on developing oral presentation competence were traced. After this search, the Biggs' 3P model (2003) of teaching and learning in universities was adopted as analysis framework for this study. This general model consists of the following four main categories for analysing teaching and learning processes in higher education: student characteristics, learning environment, learning process, and learning outcomes. These factors are also pertinent for studying the development of oral presentation competence in the context of higher education. Previous studies in the domain of higher education successfully used this model for systematically reviewing the literature (e.g. Noroozi, Weinberger, Biemans, Mulder & Chizari, 2012; Spelt, Biemans, Tobi, Luning & Mulder, 2009). In line with the usage of Biggs' model in these former reviews, in this study teaching and learning is considered as an interactive process, whereby the components student and learning environment (presage level) and learning processes (process level) determine the component learning outcomes (product level). The selection of this general model corresponds with the purposes of this review, because it facilitates the uncovering of substantiated relationships between learning environment characteristics and learning outcomes in the reviewed publications. This framework explicitly links the learning environment characteristics with learning outcomes and emphasizes the intermediate variable 'learning processes'. Therefore, this model allows for finding arguments for the relationships between the learning environment and outcomes in the identified learning processes. Moreover, the explication of the variable 'student characteristics' in the framework provides more insights regarding the generalizability of the identified relationships for students from varying educational levels or domains.

Building on Biggs' 3P model (2003), a critical analysis was carried out. The first stage of analysis was conducted by two researchers, independently, and consisted of the identification of the learning environment characteristics, student characteristics, learning processes and oral presentation performance related dependent variables in three frequently cited key publications within this specific research field (De Grez, Valcke & Roozen, 2009a; Mitchell & Bakewell, 1995; Smith & Sodano, 2011). Besides this identification process, these components and their arguments for their relationships were categorized into a Biggs' model (2003) per article. This

first step was crucial in obtaining a strategy to analyse the remaining 49 publications. In the second stage, the first author classified every publication in a Biggs' model (2003), elaborated with conceptual and empirical arguments for the displayed relationships. All resulting models were discussed with the second author, refined, and then combined into one overall 3P model (Biggs, 2003). The framework 'Developing Oral Presentation Competence in Higher Education: Synthesis of the Reviewed Studies' (see Figure 2.1) provides an exhaustive picture of all studied learning environment characteristics, student characteristics, learning processes, and outcomes traceable in the reviewed publications. In the third stage, the most cited characteristics of the learning environment were selected based on their presence in more than ten (i.e., 20%) of the reviewed publications. This twenty percent as minimum is based on the 80/20 principle, originally used in the business domain, referring to the norm that 80 percent of the results stem from a mere 20 percent of the efforts (Juran, Gryna & Bingham, 1974). This principle is also used in the context of educational sciences (e.g. Meijer, Bulte & Pilot, 2013). After selecting these key learning environment characteristics, their related effects on oral presentation competence or components thereof and arguments (theoretical or empirical arguments distracted from publications), these aspects were synthesized into an elementary form of a design principle, following the ideas of Van den Akker (1999, p. 5): *"If you want to design intervention X (for the purpose/function Y in context Z), then you are best advised to give that intervention the characteristics A, B, and C (substantive emphasis), and to do that via procedures K, L, and M (procedural emphasis), because of arguments P, Q, and R"*. Regarding the purpose of this study to relate learning environment characteristics with oral presentation performance and support this with underlying arguments, the following aspects of the formula were explicitly included in the construction of the design principles: "characteristics of the intervention A, B and C" for "learning environment characteristics", "for the purpose/function Y" for "oral presentation competence or components thereof", based on "argument P, Q en R" for "arguments". Since these conceptual and empirical arguments, considering the size of the text, require a deep elaboration, and therefore undermine the readability of the principles, the authors decided to integrate the arguments in an explanatory text and to synthesize the learning environment characteristics (A, B and C) and presentation performance components (Y) in the formulation of the design principles. In the fourth stage, the preliminary set of design principles was plenary discussed together with the other members of the research team. These discussions focused on the following aspects concerning each principle of the set: 1) the extent to which the underlying theoretical and empirical argumentation was convincing; 2) the extent to which the principle was distinctive; 3) the extent to which a principle could be applied in practice in higher education; 4) the extent to which a principle met the qualification of readability. After agreement of all members of the research team, the last stage was launched. This final phase focused on

the classification of the principles based on the categorization of Biggs (1996), regarding the components 'instruction', 'learning activities' and 'assessment strategy'. This resulted in the final set of design principles for developing oral presentation competence in higher education.

Table 2.1 Quantitative data description of the reviewed publications

Variables	Items	Number of publications
Type of publications	Empirical	41
	Conceptual	11
Design	Experimental or quasi-experimental	33
	Case-study	2
	Review study	2
Type of analysis	Quantitative	39
	Qualitative	4
	Mixed	1
Domain	Business	16
	Communication	8
	Medicine	6
	Multidisciplinary	6
	Engineering	3
	Others (cited once or twice)	13
Country of study	United States of America	34
	Australia	4
	Belgium	4
	Canada	3
	Hong Kong	2
	Others (cited once)	5

PRESAGE

PROCESS

PRODUCT

Student characteristics

Students' traits

- Gender
- Domain
- Educational level

Prior competence & perception

- Communication competence
- Communication apprehension
- Generic feeling of anxiety
- Generic feeling of self-efficacy
- Feedback sensitivity
- Goal orientation
- Perception towards the purpose of oral presentations and the learning environment

Learning environment

Resources and settings

- Context (face-to-face, online; public speaking course, integrated, internship)
- Duration
- Group size
- Group composition

Design characteristics

- Learning objectives (1)*
- Instruction by theory
- Learning task (2)
- Behaviour modelling (3)
- Discussion of effective behaviours
- Opportunity to practice (4)
- Feedback:
  - Intensity and timing of feedback (5)
  - Feedback source
- Students involving in formative assessment:
  - Peer assessment (6)
  - Self-assessment through (7)
    - Videotaping
    - Public speaking portfolio
- Assessment criteria and rubrics

Learning processes

- Learning from instruction
- Observational learning
- Learning by doing
- Dealing with receiving feedback
- Learning from self-reflection
- Providing feedback to peers
- Learning by creative thinking
- Learning from classroom discussion
- Learning by reading and listening
- Learning by goal setting for future performances

Performance

- Oral presentation competence
- (content, delivery, organization, context, general)
- Communication apprehension
- (state-based, trait-based)
- Self-efficacy regarding presenting
- Anxiety regarding presenting

Rated

- Several items
- Scales, rubrics
- Pre- and/or post-tests
- By teachers/experts, peers or self-perception

Figure 2.1 Framework 'Developing Oral Presentation Competence in Higher Education: Synthesis of the Reviewed Studies' (based on the original 3P model of Biggs, 2003)

**The numbers refer to the design principles in the result section.*

2.3 Results

Based on the overall framework in Figure 2.1, this section describes the resulting seven educational design principles for promoting oral presentation competence in higher education (see Figure 2.2). The sequence of these principles follows the ideas of aligned course design (Biggs, 2003): (1) instruction, (2) learning activities and (3) assessment strategy. Firstly, each design principle is related to the theoretical background mentioned in the selected publications, providing the argumentation for the principle. This first theoretical part is constructed following these aspects: 1) the quantity of studies incorporating the particular learning environment characteristic as a research focus; 2) the proportion of the total reviewed publications addressing argumentations based on theoretical notions; 3) an overview of all findings of existing conceptual argumentations in the selected publications concerning the impact of the learning environment characteristic on oral presentation competence or specific components thereof (e.g. self-efficacy or anxiety regarding presenting). Secondly, the empirical evidence to underpin the particular principle is described and discussed. For each section, an extensive overview was developed consisting of all empirical evidence for that particular educational design principle. Because of concerns as 'readability' and 'handling' for this review, these sections of empirical evidence were constructed based on the following aspects: 1) an extensive overview regarding the empirically studied relationships between the particular characteristic and oral presentation competence or specific components thereof mentioned in the reviewed studies; 2) empirical evidence for all mentioned specific aspects of the key learning environment characteristic adopted in the design principle; 3) an analysis explicitly emphasizing (quasi-)experimental studies focusing on the particular key characteristic in isolation, facilitating strong empirical arguments for the principle, considering the adopted methodology. Thirdly, the main theoretical and empirical conclusions for each design principle are briefly summarized.

2.3.1 The Instruction

Learning objectives

Design principle 1: Ensure that learning objectives are communicated explicitly to students and are specifically formulated in relation to criteria of oral presentations in order to increase self-efficacy beliefs and oral presentation competence.

At least a fifth of the reviewed publications endorsed the explicit communication and specific formulation of learning objectives as an important learning environment characteristic for

developing oral presentation competence (e.g. De Grez et al., 2009a; Houde, 2000; Kerby & Romine, 2009). The reviewed literature provides insight in several aspects of presentations that are distinguished, leading to different specific learning goals. Besides aspects such as content and form of presentations, the presentation delivery and the interaction with the audience are also frequently cited as crucial assessment criteria (e.g. Bower et al., 2011; Carroll, 2006; De Grez et al., 2009a). De Grez et al. (2009a) emphasized that it is not possible to pay attention to all these elements of an oral presentation at once (p. 298). Learning objectives for developing oral presentation competence should, therefore, specifically focus on different aspects of this competence. The specificity of the objectives refers to the concreteness of the goals as well. Objectives are merely formulated from the perspective of the learner in a positive manner, like: *"I'm going to practice my presentation at least two times to get familiar with the content and the structure of the presentation"* or *"I'm going to adjust the terminology during my presentation in a correct way to the audience"*. Only two of the selected publications refer to arguments embedded in theory. The social cognitive theory of Bandura (1997) is adopted in the studies of De Grez et al. (2009a) and Tucker and McCarthy (2001) as a theoretical framework that builds on three interacting determinants of human functioning: environment, behaviour and person. While focusing on the relationship between environment and person, De Grez et al. (2009a) cited previous studies supporting the argument that instructional goals narrow what students focus on, perform an energizing function, encourage persistence and affect action indirectly by use of task-relevant knowledge and strategies (p. 294). In addition, De Grez et al. (2009a) cited the work of Schunk (2001), emphasizing research evidence that supports the benefits of specific goals, as they are more likely to enhance self-regulation as compared to general goals. More specifically, Tucker and McCarthy (2001) add to this the positive effect of sub-goals, in contrast to general goals, on self-efficacy as an important intermediate variable in developing oral presentation competence. Considering the literature concerning goal setting, there is controversy as to who is expected to set the goals for developing oral presentation competence (De Grez et al., 2009, p. 295). Although Ames (1992) mentioned that perception of control is a significant factor affecting learning complex behaviour, other researchers claimed that when people accept and commit themselves to assigned goals, these goals can be equally well motivating as self-set goals (e.g. Schunk, 2001; De Grez et al., 2009a).

Regarding the empirical evidence supporting this design principle, a first group of researchers suggested the explicit communication and specific formulation of learning objectives, by teachers and curriculum designers, as a characteristic of the learning environment for developing oral presentation competence (e.g. Bayless, 2004; Houde, 2000; Pittenger et al., 2004; Young & Murphy, 2003). The assessment results in the study by Kerby & Romine (2009) showed that

clearly and explicitly stated learning objectives were related to substantial growth in oral presentation competence between the sophomore and senior years in a business curriculum. In addition, Pittenger et al. (2004) found similar progress in competence by focusing on the effects of specific learning objectives that meet 'real-world standards' (Gulikers, Bastiaens & Kirschner, 2004) related to oral presentations. These specific learning objectives were formulated and applied in a business curriculum, based on competencies derived from business professional practice. A second group of researchers emphasized the importance of setting goals by students themselves directed to oral presentations (e.g. De Grez et al., 2009a; Tucker & McCarthy, 2001; Mitchell & Bakewell, 1995). De Grez et al. (2009a) studied this characteristic of the learning environment in most detail. In an experimental study, these researchers compared students' presentation performances in a condition that fosters defining specific goals by the self with a control condition where only a general goal has been presented by the instructor. The results showed that students in the first condition significantly outperformed students in the control condition considering content-related items of oral presentations.

Thus, arguments building on the social cognitive theory emphasize the formulation of specific instead of general learning objectives in order to develop oral presentation competence or self-efficacy. Furthermore, supporting evidence for setting these objectives, both by teachers as well as students themselves, is traced in empirical studies. Especially, the combination of specific goals directed to aspects of oral presentations and the formulation of these goals by students themselves, can be considered as an effective principle for developing oral presentation competence and self-efficacy regarding presenting in educational practice.

Learning task

Design principle 2: Ensure that the learning task – the presentation assignment – is related to content of the particular discipline considered as relevant by students, the complexity of the task develops through the course and students perceive the context of the task as 'authentic' to enhance self-efficacy beliefs, oral presentation competence and to decrease communication apprehension.

More than a third of the reviewed studies identified specific characteristics of the learning task – the oral presentation assignment – for encouraging oral presentation competence (e.g. Bayless, 2004; Mossa, 1995; Taylor, 1992), self-efficacy (Tucker & McCarthy, 2001) or reducing communication apprehension (Leeds & Maurer, 2009). Approximately half of these selected publications refer to arguments grounded in theory. The following theoretical frameworks or concepts were cited in more than two of these studies: the social cognitive theory of

Bandura (1997), communication apprehension as a crucial intermediate variable to develop oral presentation competence (McCroskey, 1970) and theories associated with case-based and problem-based learning (e.g. Econopouly, Byrne and Johnson, 2010; Kolber, 2011). Conceptual relations that these studies suggested were that a challenging learning task (Chan, 2011) and working with complex, authentic tasks in case-based (Econopouly et al., 2010) or problem-based learning settings (Kolber, 2011) increases presentation performance via increasing students' motivation (De Grez et al., 2009a), that repeatedly practicing presentations for real world audiences increases self-efficacy (Tucker & McCarthy, 2001), and that ordering the presentation learning tasks from simple to complex decreases communication apprehension and thereby improves presentation competence (Grace & Gilsdorf, 2004).

Three characteristics of the learning task are empirically studied in more detail: twelve publications mentioned the content of the task (e.g. Bayless, 2004; De Grez et al., 2009a; Mossa, 1995), thirteen studies described the tasks' complexity, e.g. length of the presentation (e.g. Grace & Gilsdorf, 2004; Kerby & Romine, 2009) and twelve publications explicitly emphasized the context in which the tasks were performed (e.g. Carroll, 2006; Houde, 2000; Leeds & Maurer, 2009).

Firstly, only De Grez et al. (2009a) experimentally studied the effects of learning task content on oral presentation performance in isolation. Their results showed that students who presented a topic that more closely matched students' interests scored significantly higher on oral presentation competence than students adopting a topic that less closely matched their interests. The authors argued that students may have considered the latter topic as less challenging, thus invoking a lower level of enthusiasm, resulting in lower oral presentation scores (De Grez et al., 2009a, p. 302). In addition, students who first presented the less challenging topic and adopted the more challenging topic in their second presentation made significant progress in competence. Other studies also experimented with the content of the presentation task, suggesting that the scientific or practical relevance of the topic positively influenced oral presentation competence. For example, Econopouly et al. (2010) and Kolber (2011) studied the effects of learning presentation skills via working on and presenting authentic cases (case-based learning) or problems (problem-based learning). Both studies revealed improvements of students' presentation competencies, students' confidence levels, and high appreciation of learning via an authentic task for the students. Secondly, with respect to task complexity, several non-experimental studies showed positive effects on various aspects of oral presentation competence (e.g. Grace & Gilsdorf, 2004; Kerby & Romine, 2009), decreased communication apprehension, and strengthening of students' accounting (i.e. discipline-related) abilities (Grace & Gilsdorf, 2004), when the course contained

a number of presentation tasks ordered from simple to more complex. Thirdly, presenting for a real audience instead of on camera (Leeds & Maurer, 2009) and for an authentic audience (i.e. professionals/clients) was found to positively influence confidence levels (Houde, 2000), self-efficacy beliefs (Tucker & McCarthy, 2001) and oral presentation competence (Chan, 2011).

Thus, the varying concepts supporting arguments for this principle encompass the social cognitive perspective, communication apprehension as a crucial intermediate variable and case-based and problem-based learning. Several empirical studies, but few of an experimental design, underline the encouragement of oral presentation performance and self-efficacy beliefs by working with challenging and relevant learning task content, ordering these tasks from simple to complex and practicing for real audiences.

2.3.2 The Learning Activities

Behaviour modelling

Design principle 3: Provide opportunities for students to observe models of peers or experts to increase self-efficacy beliefs and oral presentation competence.

In more than a third of the reviewed studies, observing models of peers or experts is explicitly mentioned as one of the key strategies to increase self-efficacy beliefs (e.g. Adams, 2004; Tucker & McCarthy, 2001) or to develop oral presentation competence (e.g. Swanson, Spooner, Reeder, Haight & van Senthilsel, 1992; Taylor, 1992). Seven publications focusing on modelling explicitly refer to argumentations based on theoretical assumptions. Again, the social cognitive theory of Bandura (1997) is cited in these publications as a theoretical framework in which observation through modelling is used to develop complex skills such as oral presentation competence (e.g. Brown & Morrissey, 2004; De Grez, Valcke & Roozen, 2012; Smith & Sodano, 2011; Taylor, 1992; Tucker & McCarthy, 2001). De Grez et al. (2009b) consider observing models as a first step in the oral presentation learning process prior to the next step of repeated performances. Other researchers use Bandura's theoretical framework to emphasize the relationship between modelling as a characteristic of the learning environment and self-efficacy beliefs of students (e.g. Adams, 2004; Brown & Morrissey, 2004; Tucker & McCarthy, 2001). It is stated that self-efficacy exerts a positive influence on learning in general, both directly and through its mediating effect on other attributes such as motivation and persistence (Bandura, 1986; Zimmerman, 1995).

With respect to empirical evidence, a distinction can be made between researchers describing the effects of adopting non-expert models - such as peers - (e.g. Tucker & McCarthy, 2001; Taylor, 1992) and studies using expert models, for example teachers or other professionals (e.g. Swanson et al., 1992; Econopouly et al., 2010). Only one researcher (Adams, 2004) compared the impact of non-expert (peers) with expert models on the self-efficacy beliefs regarding students' own hypothetical presentation. The results of this study revealed that no change in self-efficacy after viewing the expert model of performance was found in the one group, while the other group, adopting a non-expert model, experienced a statistically significant positive change in self-efficacy after viewing the peer model performance. In this field, similar evidence was traced for modelling peers on self-efficacy beliefs (Tucker & McCarthy, 2001) and oral presentation competence (e.g. Taylor, 1992; De Grez et al., 2009b; Pittenger et al., 2004). Other researchers adopted 'expert' models and also reported significant improvements of students' oral presentation competencies (e.g. Swanson et al., 1992; Econopouly et al., 2010). Hence, both expert models and peer models could positively affect students' oral presentation competence or self-efficacy beliefs.

Thus, arguments derived from the social cognitive theory, referring to observation through modelling, emphasize the development of oral presentation performance and self-efficacy beliefs. Empirical evidence reveals positive influence of both expert as well as non-expert models on the acquisition of oral presentation competence, while stronger evidence is found for the non-expert model taking the quality of the adopted study designs into account.

Opportunity to practice

Design principle 4: Provide opportunities for students to practice their oral presentations in order to develop their oral presentation competence and to decrease their communication apprehension.

Forty-seven of the reviewed publications adopted the opportunity to practice oral presentations as a crucial learning environment characteristic (e.g. Clark & Jones, 2001; Hay, 1994; Kim, Kogan, Bellini & Shea, 2005; Levasseur, Dean & Pfaff, 2004; Taylor & Toews, 1999). In ten publications, arguments to support this design principle are related to theoretical notions. The following concepts were found: the opportunity to practice presentations is an essential part of a learning cycle (e.g. De Grez, 2009b; Tucker & McCarthy, 2001), practicing presentations is a crucial stage in a reflection cycle (Bower et al., 2011), practicing is a form of active learning that enhances oral presentation competence (e.g. Mossa, 1995; Nilsson, 2001, Shaw, 2001), practicing is a key strategy to reduce communication apprehension (Bower et al., 2011; Rubin et al., 1997)

and the notion that performances develop as the number of repetitions of the activity increases (Calcich & Weilbaker, 1992). In addition to this latter concept, while building on the work of Ray (1973), Calcich & Weilbaker (1992) suggested that the number of presentations required for maximum performance follows the classical S-shaped learning curve (p. 33).

Empirical evidence is adduced, supporting the relationship between practicing presentations and enhancing oral presentation competence (e.g. Swanson et al., 1992; Smith & Sodano, 2011), reducing communication apprehension (e.g. Rubin et al., 1997; Leeds & Maurer, 2009), improving self-efficacy and increasing confidence (e.g. Tucker & McCarthy, 2001; Rubin et al., 1997). The frequency of opportunities for practicing presentations varied considerably between the studies. For example, King, Young and Behnke (2000) adopted two presentation assignments, De Grez et al. (2009b) implemented three presentations, Grace and Gilsdorf (2004) suggested four presentation performances, while Dupagne, Stacks and Giroux (2007) integrated five speeches in their studied learning environment. Although the majority of the researchers studied the opportunity to practice as one of the characteristics of the learning environment, Calcich and Weilbaker (1992) focused on this characteristic in most detail. In the context of a business curriculum, these researchers studied the optimal number of presentations. They stated that with a two-presentation sequence, student performance is significantly higher than with a single presentation. Additionally, a three-presentation sequence offered no significant additional benefit and may take students past the apex of the classical S-shaped learning curve (Calcich & Weilbaker, 1992, p. 33). Findings from De Grez et al. (2009b) could be interpreted in line with these results, showing that after significant improvements in oral presentation performance between the first and second presentation, no significant growth in performance was traceable between the second and third presentation. Without discarding the importance of practicing in itself, some researchers explicitly stated that it must be accompanied by other learning environment characteristics to foster students' performance (Swanson et al., 1992), such as having an attentive audience (e.g. Shaw, 2001; Tucker & McCarthy, 2001).

Thus, the opportunity to practice is emphasized by a large proportion of the studies, but rarely studied in isolation. Several concepts suggest that practicing is a crucial variable to develop oral presentation performance and to decrease communication apprehension. Some empirical evidence supports the finding that the greatest improvement in competence or components thereof is found between the first and second presentation performance. Future research should focus on this issue in order to empirically refine the learning progress of practicing presentations.

2.3.3 The Assessment Strategy

Intensity and timing of feedback

Design principle 5: Ensure that feedback is explicit, contextual, adequately timed and of suitable intensity in order to improve students' oral presentation competence.

In 36 of the reviewed publications, receiving feedback on oral presentation performances is endorsed as a crucial characteristic of an effective learning environment for developing presentation competence (e.g. Green, Hershman, DeCherrie, Greenwald, Torres-Finnerty & Wahi-Gururaj, 2005; King et al., 2000; Mitchell & Bakewell, 1995; Smith & King, 2004; Wiese, Varosy & Tierney, 2002). According to De Grez et al. (2010b), feedback and assessment play an essential role in the learning cycle of acquiring complex behaviour, such as developing oral presentation competence. Although feedback is among the major influences on learning and achievement (Hattie, 2009), the type of feedback and the way it is given can be differentially effective (Hattie & Timperly, 2007). A fifth of the reviewed publications emphasized characteristics of the type of feedback as important for encouraging students' oral presentation competence (e.g. Baker & Thompson, 2004; Kerby & Romine, 2009), whereas six publications referred to arguments grounded in theory (e.g. Carroll, 2006; King et al., 2000). The following four conceptual relations between the type of feedback and oral presentation performance were found. Firstly, explicit feedback is crucial to ensure that reflective learning takes place, which is conditional for developing presentation performance (Bower et al., 2011; Carroll, 2006). Secondly, according to rhetoric and its emphasis on sensitivity to context, contextual feedback is crucial to prevent dysfunctional generalizations by students, resulting in deficient presentation skills (e.g. Haber & Lingard, 2001; Kim et al., 2005). Thirdly, the timing of feedback influences the development of oral presentation competence, because certain aspects associated with presentations require conscious deliberation, while others are executed automatically (King et al., 2000). Depending on the type of aspect of oral presentation competence, the provision of feedback should be immediate or rather delayed. Fourthly, the intensity of feedback impacts students' interpretation of feedback, which is an important intermediate variable for enhancing oral presentation competence (Smith & King, 2004). In predicting the effect of feedback on performance, feedback intervention theory (Kluger & DeNisi, 1996) refers to the nature of the presentation aspect performed and personality variables (King et al., 2000). Building on the previous theoretical notion, King et al. (2000) emphasized that feedback must be related to the presentation level, motivation and learning, instead of meta-task processes, in order to improve performances.

Although empirical evidence is found for the relationships between explicit or contextual feedback and the enhancement of oral presentation performances (e.g. Carroll, 2006; Haber & Lingard, 2001), the majority of the reviewed publications studied these types of feedback simultaneously with other characteristics of the learning environment. In addition, the timing of feedback (King et al., 2000) and the intensity of feedback (Smith & King, 2004) are experimentally studied in isolation. Considering the impact of the timing, King et al. (2000, p. 365) proved that immediate feedback was superior to influence aspects that are rather immediate (e.g., enhancing eye contact), whereas delayed feedback was superior for enhancing elements of oral presentation competence that require deliberative and effortful processing (e.g., changing/expanding the length of an introduction of a presentation). Taking the intensity of feedback into account, Smith and King (2004) reported that students who received feedback of any intensity level (i.e. high or low) outperformed students who received no feedback. However, they discovered that students' reaction to high or low intensity feedback differed depending on their feedback sensitivity. Specifically to high feedback-sensitive students, it was found that they developed more desired public speaking behaviours (considering eye contact and introduction length of the presentation) in a condition where they received tactful and non-confrontational feedback (i.e. low intensity). Less strong evidence was traced for the negative correlation between sensitivity of feedback and desired behaviour in a situation where students received feedback characterized by direct and frank language (Smith & King, 2004).

Thus, varying concepts, regarding reflective learning, sensitivity to context and feedback directed to specific aspects of oral presentation competence, emphasize the type of feedback as essential for developing this competence. Empirical evidence suggests that feedback on aspects of presentation competence should be explicit, contextual adequately timed and of suitable intensity. More specifically, the timing of feedback (e.g. immediate or delayed) depends on specific aspects of oral presentation competence that are immediate or require deliberative processing.

Peer assessment

Design principle 6: Encourage the involvement of peers in formative assessment processes in order to develop students' oral presentation competence and attitudes towards presenting.

More than a third of the reviewed publications adopted peers in formative assessment processes to encourage oral presentation performances (e.g. Baker & Thompson, 2004; Hill & Storey, 2003; Lane, 2007; Shaw, 2001). Formative assessment processes are directed to monitor and improve student learning through providing students with feedback (Falchikov, 2005). Ten

publications explicitly refer to theoretical arguments for the relationship between the adoption of peers in such processes and the development of oral presentation performances. Firstly, researchers argue that triangulating multiple feedback mechanisms, such as feedback from the instructor, the self and the peer, allows greater reflective learning to occur amongst participants and audiences (Carroll, 2006, p. 10). Secondly, other researchers consider the adoption of peers in formative assessment as a form of active learning (e.g. Shaw, 2001; Econopouly et al., 2010) and collaborative learning (e.g. Kolber, 2011; Nilsson, 2001) that engages students (Econopouly et al., 2010) and encourages a higher sense of responsibility in feedback procedures (e.g. Cheng & Warren, 2005; Shaw, 2001; Topping, 1998). Peers assessing other students' presentations also encourages students' own performance by paying explicit attention to required performance criteria (e.g. Cheng & Warren, 2005; De Grez et al., 2012). Moreover, increased responsibility in giving and receiving feedback enhances the willingness to speak that might lead to increased oral presentation competence (Mitchell & Bakewell, 1995).

Regarding empirical evidence, several researchers found support for the relationship between adopting peers in formative assessment processes and developing oral presentation competence (e.g. Cheng & Warren, 2005; Econopouly et al., 2010; Kolber, 2011; Topping, 1998). Mitchell and Bakewell (1995) studied the impact of peer-group feedback on oral presentation performance in most detail. Based on a controlled experimental study design, these researchers showed that where peer feedback is used together with feedback from a tutor, the presentation performance is significantly more improved than in a condition with tutor feedback alone (Mitchell and Bakewell, 1995). However, it is questionable whether the variations in presentation performances between the conditions were caused by differences in the quantity of feedback or by the specific source of feedback (e.g. the teacher or the peer). Although some researchers reported positive effects of formative peer assessment on students' attitudes (Kolber, 2011) or perceptions towards peer feedback (De Grez et al., 2010a), other researchers mentioned that not all students prefer peer evaluations (Baker & Thompson, 2004), especially when students do not feel competent about certain assessment criteria for developing oral presentation competence (e.g. Cheng & Warren, 2005). Therefore, several researchers (e.g. Cheng & Warren, 2005; De Grez et al., 2010b; De Grez et al., 2012) suggested training peers in assessment processes prior to formative assessment processes in the classroom.

Thus, conceptual arguments embedded in theory, encompassing reflective, active and collaborative learning, support the involvement of peers in feedback processes to develop presentation performance. Empirical evidence is found in several studies, emphasizing the impact of peer assessment on oral presentation competence and students' attitudes towards

presenting. In order to apply this principle in educational practice, the importance of training peers in assessment processes should be noticed.

Self-assessment

Design principle 7: Facilitate self-assessment using videotaping and portfolios to encourage students' self-efficacy beliefs, oral presentation competence and attitudes towards presenting.

Slightly more than a third of the reviewed studies focused on the facilitation of self-assessment to enhance oral presentation competence. In most studies, self-assessment is considered as a process by which students monitor and evaluate their own presentation performance, through videotaping and written portfolios, to provide useful self-feedback and to find strategies for improving their future performance. Three quarters of these studies refer to argumentations based on theoretical assumptions. A first group of researchers considers self-assessment as an essential step in reflection and learning cycles for developing students' presentation competence (e.g. Bower et al., 2011; De Grez et al., 2009a; Reitmeier & Vrchota, 2009; Qurban & Austria, 2009; Lane, 2007) in addition to other essential stages within these cycles, such as 'practicing presentations' and 'reflection on presentations of others'. A second group of researchers argues that self-assessment, by watching oneself presenting, decreases communication apprehension (Dupagne et al., 2007) and enhances self-efficacy levels (Brown & Morrissey, 2004). Researchers explain that self-directed viewing of successful speeches coupled with explicit focus on certain presentation competencies might result in students reporting more positive perceptions of themselves. Positive visualization regarding previous performances is suggested to encourage lower levels of apprehension and more practicing (Hinton & Kramer, 1998).

Considerable empirical evidence is traced for the effect of self-assessment on the development of oral presentation competence (e.g. Bourhis & Allen, 1998; Jensen & Harris, 1999; Qurban & Austria, 2009; Smith & Sodano, 2011), self-efficacy levels (Brown & Morrissey, 2004), students' confidence levels (e.g. Hinton & Kramer, 1998; Dupagne et al., 2007) and attitudes and perceptions of students towards the process of self-assessment and as a relevant strategy to develop their oral presentation performances in the future (e.g. De Grez et al., 2012; Dupagne et al., 2007; Smith & Sodano, 2011). However, some empirical studies did not reveal a positive impact of self-assessment on oral presentation performance (e.g. De Grez et al., 2009a; De Grez et al., 2009b). Though these researchers based their claims on experimental studies, explicitly the design sections of these publications need to be approached carefully. In a study by De Grez et al. (2009a), two conditions were compared that both encouraged self-reflection (watching own

videos) that could have influenced the lack of significant differences in performance development between the students in the conditions. In a subsequent study by De Grez et al. (2009b), the impact of self-assessment on oral presentation performance was measured after students had already attained the most progression in presentation competence. Although several empirical results showed positive impacts of self-assessment on oral presentation performances, evidence based on (quasi-)experimental studies, conducted in the phase during which most progression in students' performances can be achieved, is lacking so far.

Thus, conceptual arguments, directed to reflective learning and positive visualization, suggest self-assessment as crucial to develop presentation performance and to increase self-efficacy levels. Empirical evidence is traced for the impact of self-assessment on oral presentation competence, students' confidence levels and perception towards the process of self-reflection. However, the quality of the reviewed study designs leaves questions for future research.

Seven Design Principles for Developing Oral Presentation Competence

Instruction

1. Ensure that learning objectives are communicated explicitly to students and are specifically formulated in relation to criteria of oral presentations in order to increase self-efficacy beliefs and oral presentation competence.

2. Ensure that the learning task – the presentation assignment – is related to content of the particular discipline considered as relevant by students, the complexity of the task develops through the course and students perceive the context of the task as 'authentic' to enhance self-efficacy beliefs, oral presentation competence and to decrease communication apprehension.

Learning Activities

3. Provide opportunities for students to observe models of peers or experts to increase self-efficacy beliefs and oral presentation competence.

4. Provide opportunities for students to practice their oral presentations in order to develop their oral presentation competence and to decrease their communication apprehension.

Assessment Strategy

5. Ensure that feedback is explicit, contextual, adequately timed and of suitable intensity in order to improve students' oral presentation competence.

6. Encourage the involvement of peers in formative assessment processes in order to develop students' oral presentation competence and attitudes towards presenting.

7. Facilitate self-assessment using videotaping and portfolios to encourage students' self-efficacy beliefs, oral presentation competence and attitudes towards presenting.

Figure 2.2 Seven Design Principles for Developing Oral Presentation Competence in Higher Education

2.4 Concluding remarks, limitations and directions for future research

2.4.1 Concluding remarks

This paper argues that the design of learning environments for developing oral presentation competence requires a systematic approach that takes the instruction, learning and assessment side of the learning environment coin into account (Biggs, 1996). A systematic literature review was conducted with the aim of synthesizing data from previous studies in this field into a set of design principles with underlying argumentations for developing this competence in higher education. By adopting Biggs' (2003) 3P model as an analysis framework, the reviewed studies were systematically categorized with respect to student characteristics, learning environment characteristics (presage), learning processes (process) and outcomes (product). Combining these aspects into one overall model (see Figure 2.1) allowed for deducing the key learning environment characteristics influencing oral presentation competence or specific components thereof and finding arguments for their relationships in the identified learning processes. Based on both theoretical and empirical findings, a set of seven design principles was formulated, showing the effects of characteristics of learning environments for developing oral presentation competence on students' performances. This comprehensive set of design principles is intended to conduct theoretical, empirical and practical studies for developing oral presentation competence in higher education (De Grez et al., 2009a). Based on this review, the following three conclusions can be drawn.

Firstly, the set of design principles offers opportunities for an effective and efficient design of the instructional environment for developing oral presentation competence. For example, the second design principle facilitates concepts for integrating presentation tasks in domain-specific courses. Another example concerns the sixth design principle that provides insights for the adoption of peers in formative assessment processes encouraging an efficient approach on the design of learning environments for developing oral presentation competence. Both principles might lead to effective and efficient adaptations in higher education curricula, since the integration of presentation competence development in domain-specific curricula and the adoption of peers supporting the teacher in feedback processes reduce instructional time.

Secondly, all seven design principles should be included in learning environments for developing oral presentation competence, considering the ideas of Biggs (1996) regarding the alignment of the three crucial components of the curriculum. In both the research foci as well as the advices for educational practice of the reviewed studies, all crucial learning environment characteristics for developing oral presentation competence, incorporated in the seven design

principles, are mentioned. However, none of these studies explicitly examined or discussed these seven principles from a coherent perspective, but studied them in isolation (i.e. manipulating one learning environment characteristics) or combined two components of an aligned learning environment related to Biggs (1996). De Grez et al. (2009a) concluded, based on previous studies in this field, that a concrete and systematic approach is needed in order to describe the didactical interventions for developing oral presentation competence from a comprehensive perspective. This position is in line with the conclusion of researchers in the field of developing competencies in competence-based education. Wesselink, Van den Elsen, Biemans and Mulder (2007) stated that the combination of the whole set of design principles is needed and relevant for realizing learning environments for encouraging competencies in practice (p. 36).

Thirdly, the added value of this study lies in the comprehensive perspective and in supporting each design principle with underlying theoretical and empirical argumentations supporting these principles in developing oral presentation performance in specific. Herewith, these argumentations facilitate specific elaborations and interpretations of the formulated principles in the context of developing oral presentation competence. These principles might also be applied to the development of other academic competencies, which could strengthen the generalizability of the set. However, the specific elaboration and interpretation of the principles will differ depending on the intended competence or skill and will require future studies.

2.4.2 Limitations

Although the publications for this review were traced from varying domains, countries and journals, these articles are biased related to certain characteristics. Therefore, before applying this set of design principles in future research, the following aspects of the review findings must be taken into consideration: (1) the characteristics of the reviewed publications, (2) the extent to which the arguments underlying the design principles are based on theoretical notions, and (3) the state of empirical evidence supporting the design principles. Firstly, the reviewed studies revealed a profile consisting of especially empirical rather than conceptual publications, more quantitative than qualitative studies, studies more frequently conducted in western than in non-western countries, a bias towards studies in the business domain and studies conducted in the context of domain-specific educational settings or regular speaking courses. Secondly, not all constructed design principles are equally based on arguments grounded in theory, ranging from two thirds of the studies relating to principle seven using theoretical arguments, to only one fourth of the studies referring to principles one and four adopting theoretical notions. Thirdly, regarding the quality of the empirical data, the following conclusions can be drawn: all design principles are partly supported by reviewed studies that studied design characteristics simultaneously and

did not use experimental study designs (e.g. Econopouly et al., 2010; Nilsson, 2001; Pittenger et al., 2004), all design principles are supported by reviewed studies varying in definitions for their studied design characteristics, several studies supporting design principles two, five and seven did not reveal significant impacts of the design characteristics on oral presentation performance and data supporting principles six and seven are partly based on self-evaluations.

Besides these described limitations related to the reviewed publications, three limitations concerning this review study remain for discussion. Firstly, regarding the method used for this review, it is remarkable that 15 core publications were found after systematically searching the selected databases, while another 37 relevant publications were added after applying the technique of snowballing. As explained in the method section, this technique provided the addition of other relevant publications taking the adopted search terms for this study into account. Secondly, an analysis of the yield of this search, based on the snowball method, showed that the selected publications adopted a wide variety of keywords for the learning environment and oral presentation competence. Including these keywords in a new systematic search revealed a comparable amount of useful results as in the initial search. Furthermore, no other relevant articles were found and added to the total of 52 selected articles for this review study. Thirdly, another limitation refers to the selection of learning environment characteristics for developing the educational design principles. Besides the seven selected learning environment characteristics for further exploration in the results section, other characteristics, such as 'instruction by theory', 'discussion of effective behaviours' and 'assessment criteria and rubrics' (see Figure 2.1), exist that might also influence oral presentation performances. However, these characteristics were omitted for constructing the design principles, since these characteristics are not yet frequently and deeply researched.

2.4.3 Directions for future research

The following section describes three directions for future research and sets a research agenda for developing oral presentation competence in higher education. These directions are built on the gaps concerning the foci of previous studies, inconsistencies in empirical and conceptual findings and the quality of empirical evidence, taking into consideration the related study designs of the reviewed publications.

Firstly, this review makes a plea for a comprehensive perspective on designing learning environments for fostering oral presentation competence, but little is known about whether a learning environment that is more characterized by the comprehensive set of design principles leads to more development of students' presentation performances. Interesting questions are (1)

to what extent current oral presentation courses are designed based on a comprehensive picture of effective learning environment characteristics and (2) whether a comprehensive perspective on the design of learning environments leads to more effective learning of oral presentation competence. Considering the first question, methods such as document analysis, classroom observations as well as focusing on the perceptions of teachers towards designing learning environments for presentation courses are relevant in order to examine to what extent their learning environments correspond to the comprehensive set of design principles. In an earlier study, Levasseur et al. (2004) conducted in-depth interviews with 23 active college teachers of advanced public speaking courses, inquiring specifically about their goals, curriculum and classroom activities and the ways in which these were distinguished from the basic speech class. However, empirical studies addressing the perceptions of a large population of presentation skills teachers, from several institutions, towards the design of presentation courses are lacking. Future research could focus on eliciting presentation skills teachers' responses towards the comprehensive set of design principles for developing students' oral presentation competence. Such research could provide a picture of the usefulness of the set of design principles and the interdependence of these principles in educational practice. Conducting triangulation of methods, by using in-depth interviews, focus group discussion sessions and large-scale surveys, within several higher education institutions, will facilitate elaboration on the following questions: To what extent are the design principles recognizable for teachers? To what extent are the principles used in educational practice? To what extent is the set of principles perceived as 'comprehensive'? What are the perceived relationships between the design principles? And, what is the perceived importance of each principle focusing on students' development of oral presentation competence? Subsequently, measuring students' presentation performances in learning environments for developing oral presentation competence, more or less characterized by the comprehensive set of design principles, is important as a next focus of research.

Secondly, directions for future studies can be formulated directed to the *learning setting* (or *context*) of the learning environment. Oral presentation competence development is both studied in the context of regular speaking courses and in domain-specific settings (see Appendix A). In regular speaking courses, this competence is studied as an individual, isolated activity independent from domain specific content (e.g. Dupagne et al., 2007; King et al., 2000; Smith and King, 2004). On the other hand, oral presentation competence can also be developed as an additional effect of learning in a domain specific authentic learning environment in which students learn through working on a professional authentic task (e.g. Econopouly et al., 2010; Kolber, 2011). This also relates to design principle two of creating an authentic learning task. Both from a scientific and educational practice perspective, it remains unanswered whether oral presentation courses are

most effective for encouraging students' development (Mitchell & Bakewell, 1995). Therefore, future studies should focus on comparing the development of students' oral presentation performances between (1) regular speaking courses and (2) learning environments consisting of authentic tasks that are strongly connected to the professional content of the specific domain, and in which oral presentation performance is incorporated as an important competence of the young professional.

Finally, taking into account the design principles related to the *assessment strategy*, focusing on the provision of feedback (design principle five), peer assessment (design principle six) and self-assessment (design principle seven), another direction for future research concerns the impact of the *source of feedback* on developing presentation competence in higher education. Building on a broader theory about feedback (Hattie & Timperley, 2007), evidence in studies supporting design principles 5, 6 and 7 showed effects of any kind of feedback on oral presentation performance over no feedback at all (e.g. Mitchell & Bakewell, 1995; Smith & King, 2004). However, high quality empirical evidence for the effects of peer feedback and self-assessment on developing presentation competence, and the conditions under which these feedback sources are successful, revealed ambiguous results (e.g. De Grez et al., 2009b; Mitchell & Bakewell, 1995). While several studies emphasized the importance of feedback by the teacher (e.g. Mitchell & Bakewell, 1995; Smith & King, 2004; Wiese et al., 2002), the peer (e.g. Cheng & Warren, 2005; Mitchell & Bakewell, 1995; Shaw, 2001; Topping, 1998) and the self (e.g. Bourhis & Allen, 1998; Hinton & Kramer, 1998; Jensen & Harris, 1999), it remains unclear whether the development of students' oral presentation competence, in terms of cognition, behaviour and attitude towards presenting, differs depending on the feedback source and under which conditions these feedback sources are successful. Future research adopting experimental pre- and post-test study designs should focus on this issue.

Chapter 3

The Impact of The Feedback Source on Developing Oral Presentation Competence

*This Chapter is based on:

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Abstract

While previous research in higher education emphasized the essence of feedback by the teacher, the peer or the self, it remains unclear whether the acquisition of students' oral presentation competence differs depending on the feedback source. This quasi-experimental study examines the effectiveness of the feedback source on 144 first-year undergraduate students' progression in cognition, behaviour and attitude towards presenting, as three interrelated elements of oral presentation competence. Mixed methods of multiple-choice tests and performance assessments using rubrics were used for data collection. Results demonstrated the superiority of teacher feedback for encouraging students' presentation behaviour, while cognition and attitude towards presenting developed significantly irrespective of the particular feedback source. However, the self-assessment condition revealed less impact on developing presentation behaviour and attitude compared to other feedback sources. Optimising peer feedback and self-assessment in curricula requires knowledge about underlying feedback processes characterising successful feedback of the various sources.

3.1 Introduction

In this research field, a systematic literature review was conducted to synthesize previously studied learning environment characteristics into a comprehensive set of educational design principles for developing oral presentation competence (Van Ginkel, Gulikers, Biemans, & Mulder, 2015). The study resulted in the formulation of seven principles related to the following crucial learning environment characteristics: learning objectives, learning task, behaviour modelling, opportunity to practice, intensity and timing of feedback, peer assessment and self-assessment (Van Ginkel et al., 2015). Taking these results together, the systematic review disclosed that three of the seven essential learning environment characteristics for developing this competence are related to the process of formative assessment, including the provision of feedback, peer assessment and self-assessment. A recently published review study on assessment and evaluation in higher education (Pereira, Flores, & Niklassen, 2015) revealed that especially the last decade showed a large number of articles addressing formative assessment and modes of assessment (i.e. peer- and self-assessment) and their assumed effectiveness. According to De Grez (2009), feedback and assessment play an essential role in the learning cycle of acquiring complex behaviour, such as developing oral presentation competence. Although feedback is one of the major influences on learning and achievement, the type of feedback and the way it is provided can be differentially effective (Hattie & Timperley, 2007). Building on a broader theory about feedback (Falchikov, 2005; Hattie & Timperley, 2007), evidence in previous studies in this field showed positive effects of any kind of feedback on oral presentation performance over no feedback at all (Mitchell & Bakewell, 1995; Smith & King, 2004). Specifically in the context of higher education, Dochy, Segers and Sluijsmans (1999) explored the use of co-, peer and self-assessment in higher education settings, and Nicol and MacFarlane-Dick (2006) elaborated a set of principles for good feedback in these contexts. However, despite several studies provided theoretical arguments and empirical evidence for the importance of feedback by the teacher (Kerby & Romine, 2009; Mitchell & Bakewell, 1995; Smith & King, 2004), the peer (Cheng & Warren, 2005; Mitchell & Bakewell, 1995; Topping, 1998) or the self (Bourhis & Allen, 1998; Bower et al., 2011; Jensen & Harris, 1999), it remains unclear whether the development of students' oral presentation competence, during the phase that the most progress can be expected - that is between the first and the second presentation - (Calcich & Weilbaker, 1992), differs depending on the specific feedback source (De Grez, Valcke, & Roozen, 2009). By adopting a quasi-experimental design, this study aims at examining the effectiveness of different feedback sources, i.e. the teacher, the peer and the self, on students' oral presentation competence development, as indicated by cognition (knowledge of presenting), behaviour (presentation skills) and attitudes (attitude towards presenting), in a higher education setting. The following sections elaborate on reviewing recent scientific

literature examining knowledge about the effects of feedback sources on these three components of competence. Based on a discussion of relevant publications, the aim was to formulate a set of concrete hypotheses guiding the quasi-experimental study reported in this paper.

3.2 Review of recent literature

To summarize knowledge about the effects of the teacher, the peer and the self on components of oral presentation competence in higher education, a literature search was executed. Since purely focusing on the connection between feedback sources and oral presentation competence only yielded a limited number of studies, the definition of the dependent variable was widened. The search intended to find comparative studies focusing on the differential influence of feedback sources on cognition, skills and attitudes in any kind of competence development in the field of higher education.

3.2.1 Towards relationships between feedback sources and competence: a literature search

The following four inclusion criteria for the search were formulated. Firstly, any relevant publication should address the relationship between, at least, one of the feedback sources (the teacher, the peer or the self) and components of competence (cognition, skills or attitudes). Secondly, the article must be published in a peer-reviewed ISI-indexed journal to obtain scientific fidelity. Thirdly, the study must be conducted in the field of higher education. Finally, to provide insight into recent scientific literature, the time span was restricted to publications from 2008 through 2014.

The following keywords were used for addressing the subject: feedback and assessment. In addition, keywords relating to the independent variable contained: teacher, peer and/or self. The keywords referring to the dependent variable were: cognition, skills, attitude and competence. Furthermore, to accentuate the relationship between the independent and dependent variables, the following action verbs were selected: develop, improve, encourage, increase and enhance. Additionally, the context was specified by adopting higher education in the search strategy. Finally, the Web of Science was used as search engine to identify only ISI-published articles.

The search yielded 95 potentially relevant scientific articles. After critically reading and analysing the abstracts, 24 scientific articles were considered as relevant, while 71 articles did not reflect the inclusion criteria. These 71 articles were omitted from the yield, since these articles failed to: address the relationship between one of the feedback sources and components of competence (35); focus on the learning process of the student as actor (15); mention one of the pre-defined components of competence (7); contain one of the pre-defined feedback sources - while solely

addressing the construction of assessment instruments - (6); share their findings in the English language instead of Spanish for example (4); conduct the research project in the context of higher education (2); relate their research questions to formative assessment – while solely focusing on summative assessment - (2).

3.2.2 The yield of the search: impacts of feedback sources on cognition, skills and attitudes

The 24 relevant publications were published in a wide range of domains, varying from Teacher Education, Psychology to Medical Studies. In addition, these studies were written by researchers from differing western and non-western countries. This section describes found relationships between feedback sources and components of competence used to formulate hypotheses for this study. Initially, the tutor was not included as keyword in the literature search, since a previous review study in the field of presenting (Van Ginkel et al., 2015) mentioned the teacher, the peer and the self as crucial suppliers of feedback. However, several studies in this search highlighted the tutor as a relevant and frequently mentioned feedback source in higher education. Therefore, the results described below also differentiate the tutor next to the teacher, the peer and the self. The tutor as feedback source is mostly defined as a second- or third-year student acting in the role of 'student-assistant'.

Firstly, in four of the 24 selected publications relationships between one or more feedback sources and the development of students' cognition were studied. One of these studies reported positive impacts of peer feedback, in an online collaborative learning environment, on developing knowledge of psychological concepts within an undergraduate course (Kelly, Baxter, & Anderson, 2010). The other studies addressed empirical findings for positive influences of peer feedback, in combination with feedback from teachers (Ng, 2014; Yalaki, 2010) or feedback from tutors (Longfellow, May, Burke, & Marks-Maran, 2008), on acquiring concepts of ICT (Ng, 2014) or developing knowledge towards writing and linguistics (Longfellow et al., 2008). None of the studies addressed the impact of self-assessment on encouraging students' cognition. Although two publications adopted more than one feedback source as focus of their study (Ng, 2014; Longfellow et al., 2008), none of the four publications studied the differential impact of feedback sources on students' knowledge acquisition. One researcher (Ng, 2014) reported, based on a survey among students, that feedback from teachers was valued as more important than feedback from peers for developing knowledge of technology. Considering the research methods of the four publications, only one study adopted a quasi-experimental study design (Yalaki, 2010). Thus, based on these few studies and findings, no concrete hypothesis could be formulated concerning the differential impact of the feedback sources on developing students' cognition towards presenting.

Secondly, in 21 of the 24 selected articles relationships between one or more feedback sources and the development of students' skills were studied. All studies addressed positive impacts of the teacher, the peer, the self and/or the tutor on a wide variety of skills, like scientific writing skills (7), reflection skills (4), communication skills (4), problem solving skills (3), technical skills (2), presentation skills (1), language skills (1), transferable skills (1) and higher order thinking skills (1). In ten studies the relationship between a single feedback source and skill development was examined. Examples concern the influence of the teacher on developing students' writing skills (Harran, 2011; Yalaki, 2010), the impact of the peer on encouraging students' language skills (Wang, Zou, Wang, & Xing, 2013), transferable skills (McGarr & Clifford, 2013) or higher order thinking skills (Tsaushu, Tal, Sagy, Kali, Gepstein, & Zilberstein, 2012) and self-feedback on students' reflection skills (Bourke, 2014) or communication skills (Von Konsky & Oliver, 2012). Eight other articles described the relationship between two feedback sources and developing this component of competence. Examples refer to the impact of peer and teacher feedback on developing scientific writing skills (Clarke, Schull, Coleman, Pitt, & Manathunga, 2013), the influence of feedback from teachers and the self on acquiring communication skills (Murdoch-Eaton & Whittle, 2012) and the impact of feedback from peers and the self on developing technical and reflection skills (Wakimoto & Lewis, 2014). In another three studies the relationships between more than two feedback sources and their impact on skills were studied (De Grez et al., 2009; Kim, 2013; Nicol, 2009). Although these studies reported positive impacts on presentation skills (De Grez et al., 2009), reflection and writing skills (Kim, 2013), only one of the 21 studies focused on the differential impact of the feedback sources on skills development. The quasi-experimental study of De Grez et al. (2009) suggested a trend in the effectiveness of feedback from the teacher, the peer or the self on students' presentation skills; even though not significant, the progress of presentation skills for students who received feedback from the teachers was 13%, 7.5% for peer feedback and 0.2% for students who developed feedback through self-assessment (De Grez et al., 2009). Important to note was that this feedback was provided between the second and third presentation performance, not between the first and the second. Moreover, other researchers also reported tendencies towards differential impacts on skills development, based on additional findings derived from the analyses of surveys (Ng, 2014) or focus group sessions (Asghar, 2010). Ng (2014) concluded that students valued the feedback they received from the teacher to a higher extent than the feedback they received from peers to develop their technical skills. In that particular study, teachers' feedback was considered as more accurate and comprehensive than that of peers and so more improvements in learning could be expected (Ng, 2014). In another study, Asghar (2010) described, based on empirical findings, that tutor feedback was considered as more valuable for students' learning than feedback from peers while developing reflection skills. Arguments for the results contained that the feedback from tutors was

regarded as more valuable, because of tutors' knowledge and authority. Taking these findings together, although some differential impacts of feedback sources on developing skills are stated in favour of the teacher, and also the tutor, instead of the peer and the self, again no convincing differential hypothesis could be formulated since most results were not significant and/or based on non-experimental study designs directed by non-comparative research questions.

Thirdly, in two of the 24 selected studies relationships between one or more feedback sources and the development of students' attitudes were studied. One study reported positive impacts of teacher feedback on students' attitude towards writing (Harran, 2011). Based on student perceptions in a four-year longitudinal study, this author concluded that feedback from the teacher was valued for being specific and non-directive. The other study reflected positive influences of a combination of several feedback sources, containing the teacher, the peer, the self and the tutor, on encouraging students' attitude towards performances within large-scale courses in the domains of psychology and linguistics (Nicol, 2009). Although empirical evidence exists in both of these studies, none of the two publications adopted comparative research questions concerning the differential impact of feedback sources towards enhancing students' attitude. In addition, findings were based on non-experimental studies in which the feedback source was not studied as an independent variable isolated from other learning environment characteristics that could possibly influence the outcome variable. Thus, considering these findings, again, no specific hypothesis could be formulated regarding the differential effects of the feedback sources on students' attitudes.

3.2.3 Conclusions from the literature

In summary, taking the findings of this review of recent literature together, there is little evidence for differential effects of feedback sources on the development of cognition, skills or attitude in the higher education context. Therefore, the potential impact of the feedback sources, the teacher, the peer, the self and the tutor, will be researched by using explorative testing in a quasi-experimental study design.

3.3 Method

3.3.1 Participants

In the academic year 2013-2014, 144 university first-year undergraduate students enrolled in five identical oral presentation courses of a Dutch university in the domain of life sciences. 57 students followed these courses in the context of their Bachelor programme *Forest and Nature Conservation* (male=30; female=27), the other 87 students participated within the Bachelor programme *Nutrition and Health* (male=13; female=74).

3.3.2 Context of the study

The design of the presentation courses was based on seven educational design principles for developing oral presentation competence in higher education relating to learning objectives, learning task, behaviour modelling, opportunity to practice, intensity and timing of feedback, peer assessment and self-assessment (Van Ginkel et al., 2015). Normally, all learning environment characteristics were reflected in the presentation courses. Firstly, individual learning objectives were formulated based on a set of rules about how to formulate such objectives. Secondly, students were required to conduct an individual presentation of five minutes twice during the course. Thirdly, before these individual presentations started, students learned about successful and non-successful presentation behaviour in a plenary setting. Fourthly, students had the opportunity to practice their presentation skills multiple times within the course, both in a group as individually. Fifthly, in a plenary group discussion, students shared their own ideas and rules about providing feedback with each other. Sixthly, in smaller group sessions, students acted as peers in providing each other feedback based on a list of presentation criteria. Seventhly, students critically reflected on their own presentation performance using videotapes and portfolio. This research manipulated the last two principles (cf. different feedback sources), leaving the other five elements as they were. Next to this, also the structure of the presentation courses was comparable to the regular courses, since each course consisted of three sessions. After a first plenary session, students were divided in smaller groups, of approximately eight students, in which each student carried out two individual presentations. Students were required to perform a five-minute presentation, strictly monitored by the facilitator of the group, on a self-selected topic in the second ánd in the third session of the course.

3.3.3 Instructional conditions

The participants were, for each of the five presentation courses, randomly assigned to one of the following four feedback conditions: 1) teacher feedback (n=36); 2) peer feedback (n=36); 3) self-assessment (n=37); 4) peer feedback guided by tutor (n=35). After the first presentation, the received feedback was determined by the feedback condition. In the first condition, students received five minutes of feedback from the teacher after their individual presentation based on a rubric instrument for developing presentation skills (see for rubric next section). Research showed that using a qualitative rubric fosters good feedback processes that can aid student learning (Panadero & Jonsson, 2013). In this condition, students were not allowed to participate in the feedback procedure to guarantee that the presenter only received feedback from the teacher. In the second condition, students received five minutes of feedback solely from several peers after their individual presentation. Again, the rubric instrument served as a feedback framework for the peers. During the session, the tutor was not allowed to intervene in the feedback process. In

the third condition, it was required to present without any direct feedback from the tutor or the peers. Afterwards, students were instructed to actively reflect on their individual presentation by facilitating them to study their performance on video, accompanied with the presentation rubric and guided by questions that encourage the process of reflection (Korthagen & Vasalos, 2005). Regarding the fourth condition, students received, in total, five-minute feedback from peers guided by tutors (third year students) after their individual presentation. This condition represented the setting in regular presentation courses within the university, in which tutors were encouraged to intervene in order to guide the process of feedback.

3.3.4 Dependent variables and instruments

In this pre- and post-test quasi-experimental study design, performances of all students were assessed addressing the crucial components of oral presentation competence: cognition, behaviour and attitude.

Firstly, the development in students' cognition towards presenting was tested using two comparable multiple-choice tests, one before the first presentation and the other afterwards the second presentation. The six questions of the test corresponded to the widely accepted main criteria for presentations, as indicated by Van Ginkel et al. (2015), regarding aspects as content of the presentation, structure of the presentation, interaction with the audience and presentation delivery. An example of an adopted question, referring to the structure of the presentation, is '*Which three elements are essential in the introduction of a presentation?*'. The score on each test was calculated by the sum of correct answers, ranging from zero to six.

Secondly, students' developments in presentation behaviour were assessed by adopting a rubric instrument that consisted of 11 sub criteria, derived from the following four main presentation criteria: content of the presentation (e.g. internalizing the subject of the presentation and connecting the subject to the prior knowledge of the audience), structure of the presentation (e.g. connecting the introduction to the closing part of the presentation), interaction with the audience (e.g. keeping the attention of the audience) and presentation delivery (e.g. ensuring eye contact with the audience, an open posture and illustrative gestures and a functional use of voice). The sub criteria were all worked out in five performance levels. Each level qualitatively described the behaviour shown at this level (see Figure 3.1 for an example of a sub criterion). The assessments were, for each condition, conducted by the same person in the pre- and the post-tests. In the first condition, the assessments were carried out by the feedback provider, the teacher. In the other conditions the tutor, who facilitated the particular session, assessed the students. To ensure the validity of the instrument, the rubric had been (1) compared with similar instruments

in higher education (Jonsson & Svingby, 2007; Rezaei & Lovorn, 2010) and (2) validated among academic skills trainers. First of all, based on a critical analysis of earlier reviewed articles in this field of presentation research (Van Ginkel et al., 2015), it was stated that the four main presentation criteria, were reflected in various instruments within thirty-eight publications (De Grez, Valcke, & Roozen, 2012; Kerby & Romine, 2009; Pittenger, Miller, & Mott, 2004). These criteria were also mentioned in nine studies that specifically used a rubric as assessment instrument (Carroll, 2006; Reitmeier & Vrchota, 2009). Another finding of this analysis referred to the adoption of five performance levels related to the defined criteria in the majority of these publications. Subsequently, the rubric instrument was validated among 24 trainer experts from different Dutch universities who answered four questions about the rubric on a five-point Likert scale. This questionnaire contained aspects as 'applicability in educational practice' and 'completeness regarding identified criteria, levels and scales'. Regarding an average score of four out of five, the assessment instrument was considered, by the researchers of this study, as valid. For this study, the scores of students' presentation performance were determined by taking the average of scores on the 11 sub criteria. Finally, the internal consistency of the rubric instrument was calculated and showed an acceptable reliability coefficient (Cronbach alpha: .710).

	++ **(10)**	+ **(8)**	+/- **(6)**	- **(4)**	- - **(2)**	**Score**
Posture and gestures	The student is able to maintain an open posture continuously with illustrative gestures.	The student is able to maintain an open posture for most of the time with supporting gestures.	The student is able to maintain an open posture on a regular basis, both with supporting and non-supporting gestures.	The student is able to maintain an open posture occasionally with mainly non-supporting gestures.	The student has an unstable or closed posture for most of the time with non-supporting gestures.	

Figure 3.1 An example of a sub criterion within the rubric oral presentation skills

Thirdly, the development of students' attitude towards presenting was measured by means of a self-evaluation test consisting of five items scored on a five-point scale. These items relate to the self-perceived level of challenge, motivation and relevance of conducting a presentation (Bower et al., 2011). An example of an item concerns the following proposition: *'I consider presenting as a relevant skill in the context of my studies'*. The score on each test was determined by the average of the scores on the five items. The reliability coefficient revealed an acceptable score (Cronbach alpha: .765).

3.3.5 Procedure

At the start of the first meeting, all students completed both the cognitive pre-test as well as the attitude pre-test. At the end of the third meeting, students fulfilled both post-tests. The development of presentation behaviour was measured in the smaller group settings after a students' first presentation in the second meeting (pre-test) and after their second presentation in de third meeting (post-test) of the course. These assessments were conducted by an assessor facilitating the particular feedback condition during the course. This assessor was a teacher or tutor (depending on the particular feedback condition), trained in using the rubric instrument during one plenary meeting and individual coaching prior to the experiment.

3.3.6 Data analysis

Firstly, paired-samples t-tests were applied to trace the progress in students' development between the pre- and post-tests, concerning the three components of oral presentation competence in each of the feedback conditions. Secondly, univariate analyses of variance were used to verify to what extent students' development between the pre- and post-tests on each of the three components depended on the specific feedback condition. Thirdly, Games-Howell post-hoc analyses were conducted to determine between which feedback groups significant differences existed.

3.4 Results

This section describes the extent to which the feedback sources influence first-year undergraduate students' presentation scores related to cognition, behaviour and attitude consecutively.

3.4.1 The impact of the feedback source on cognition towards presenting

Paired t-test results revealed that students' development of cognition increased significantly ($p < 0.01$) for each of the four feedback conditions (Table 3.1). Additional analysis showed that no significant differences ($F(3, 130) = 1.17$; $p = 0.32$) in students' progress could be determined between the four constructed feedback conditions.

Table 3.1 Mean scores, standard deviations and N related to cognition for the four instructional conditions

Feedback group	Cognition test (pre-test)	Cognition test (post-test)	Mean difference
1. Teacher feedback			
Mean	4.13	5.19	1.06**
Std. Deviation	1.02	0.83	1.12
N	31	31	31
2. Peer feedback			
Mean	4.00	5.26	1.26**
Std. Deviation	1.10	0.90	1.26
N	34	34	34
3. Self-assessment			
Mean	4.08	5.57	1.49**
Std. Deviation	1.09	0.65	1.17
N	35	35	35
4. Peer feedback guided by tutor			
Mean	3.71	5.29	1.58**
Std. Deviation	0.97	0.90	1.23
N	31	31	31
Total			
Mean	3.98	5.33	1.35**
Std. Deviation	1.05	0.83	1.20
N	131	131	131

*Note: *p<0.05; **p<0.01.*

3.4.2 The impact of the feedback source on presentation behaviour

Students' presentation performances for each of the four feedback conditions increased significantly ($p < 0.01$; see Table 3.2). Further analysis disclosed significant differences between the impact of the feedback sources ($F(3, 131) = 6.36$; $p < 0.00$). The following feedback sources significantly differed with respect to the impact on presentation behaviour: 1) the teacher feedback condition scored significantly higher than the peer feedback condition ($t = 0.47$; $p = 0.02$); 2) the teacher feedback condition scored significantly higher than the self-assessment condition ($t = 0.63$; $p < 0.00$); the teacher feedback condition scored significantly higher than the condition peer feedback guided by tutor ($t = 0.41$; $p = 0.03$).

Table 3.2 Mean scores, standard deviations and N related to behaviour for the four instructional conditions

Feedback group	Behaviour test (pre-test)	Behaviour test (post-test)	Mean difference
1. Teacher feedback			
Mean	6.74	7.75	1.01**
Std. Deviation	0.82	0.76	0.68
N	34	34	34
2. Peer feedback			
Mean	7.09	7.63	0.54**
Std. Deviation	0.73	0.69	0.60
N	33	33	33
3. Self-assessment			
Mean	7.43	7.80	0.37**
Std. Deviation	0.70	0.61	0.69
N	34	34	34
4. Peer feedback guided by tutor			
Mean	6.89	7.49	0.60**
Std. Deviation	0.57	0.53	0.46
N	31	31	31
Total			
Mean	7.04	7.67	0.63**
Std. Deviation	0.75	0.66	0.65
N	132	132	132

*Note: *p<0.05; **p<0.01.*

3.4.3 The impact of the feedback source on attitude towards presenting

The progress of students' attitude towards presenting proved to be significant ($p < 0.05$) for all of the feedback conditions, except for the self-reflection condition (see Table 3.3). However, results indicated no significant differences between the impact of the various feedback sources on students' attitude towards presenting ($F(3, 128) = 2.18$; $p = 0.09$).

Table 3.3 Mean scores, standard deviations and N related to attitude for the four instructional conditions

Feedback group	Attitude test (pre-test)	Attitude test (post-test)	Mean difference
1. Teacher feedback			
Mean	3.14	3.35	0.21*
Std. Deviation	0.75	0.67	0.48
N	31	31	31
2. Peer feedback			
Mean	3.34	3.55	0.21**
Std. Deviation	0.68	0.57	0.43
N	33	33	33
3. Self-assessment			
Mean	3.27	3.34	0.07
Std. Deviation	0.75	0.68	0.38
N	34	34	34
4. Peer feedback guided by tutor			
Mean	3.05	3.41	0.36**
Std. Deviation	0.59	0.61	0.50
N	31	31	31
Total			
Mean	3.20	3.41	0.21**
Std. Deviation	0.70	0.63	0.46
N	129	129	129

*Note: *p<0.05; **p<0.01.*

3.5 Conclusions and discussion

This quasi-experimental study aimed to examine the effectiveness of different feedback sources, that is the teacher, the peer, the self and the peer guided by tutor, on the competence development of 144 students, relating to oral presentation cognition, behaviour and attitude, in a higher education setting. Results of this study show that the overall progression of cognition, behaviour and attitude towards presenting, between the first and second presentation performance, turned out to be substantial. This finding supports the idea of the close interrelatedness of these three components of oral presentation competence (Mulder, 2014; Van Ginkel et al., 2015). However, presentation behaviour proved to be more sensitive than cognition and attitude to the influence of the feedback source. This might be caused by the fact that the provided feedback, irrespective of feedback conditions, was guided by a rubric specifically designed to serve as a feedback instrument for developing oral presentation skills. Cognition and attitude towards presenting

were more implicitly incorporated in this rubric instrument. For example, if 'the structure of a presentation' was logical (presentation behaviour), the student implicitly revealed knowledge about selecting an adequate structure for a presentation (cognition towards presenting). The finding that presentation behaviour developed most in the teacher feedback condition, might suggest that the teachers more optimally used the rubric in their feedback.

The essential role of the teacher as expert in student learning is frequently mentioned in the 'expert literature' within higher education (Reis & Renzulli, 2010). More specifically applied to the field of developing academic and professional skills, Porte, Xeroulis, Reznick and Dubrowski (2007) argued that verbal feedback from the expert is crucial in developing students' skills. In addition, Van Haaren and Van der Rijst (2014) emphasized that teachers as experts fulfil an essential role as role-models in student learning. Furthermore, their influence as facilitators of peer feedback processes should not be underestimated. In a study aimed for finding design principles for peer assessment in higher education, Van den Berg, Admiraal and Pilot (2006) frequently emphasized the crucial role of the teacher as designer and facilitator of effective peer feedback processes. In this experiment, peer feedback was only provided by students themselves or in combination with the guidance of tutors. Both in the conditions 'peer feedback' as in 'peer feedback guided by tutor', the impact of the specific feedback source on developing students' presentation behaviour was less compared to the influence of the teacher. Though previous studies have revealed positive effects of peer assessment on skill development after students received assessment training prior to feedback processes (Dochy et al., 1999). In addition, working with detailed rubrics should also facilitate the provision of effective peer feedback among students. It is questionable to what extent these strategies could make peer assessment as effective as feedback from teachers. Therefore, it is required to explore how peers and tutors use this rubric in comparison to its use by teachers. And, how do teachers provide their feedback and what kind of aspects of the rubric do they focus on? Future studies are necessary that specifically focus on these feedback processes in depth.

Besides the mentioned essence of the role of the teacher and potentials for peer feedback, the limited impact on both presentation behaviour (see also Table 3.2) as well as attitude towards presenting (see also Table 3.3) of the self-assessment condition provides room for discussion among teachers and researchers in the higher education field. The strengths of students as active participants in formative assessment and self-regulated learning are recently and frequently discussed (Nicol & Macfarlane-Dick, 2006). However, a self-assessment condition for developing oral presentation skills, in which students are the only suppliers of feedback on their own performance, appeared to be limited. The following arguments could be adduced for the

lack of impact of the self-assessment condition. Firstly, in line with earlier arguments, several studies in the field of higher education (Higgins, Hartley, & Skelton, 2002) express the role of an external feedback source on the development of students' academic skills and also in discussing reflection skills and positive attitudes towards reflection. Secondly, critically looking at the intended reflection processes, it remains questionable to what extent the students in this self-assessment condition fully gained from the reflection cycle as designed by Korthagen and Vasalos (2005) and how they used the assessment rubric and its elements in their reflection. In this study, students were asked to reflect on their video performances, guided by a couple of questions related to this model. However, a critical analysis towards the data collection showed that a third of the students in the self-assessment condition did not return their reflection forms. This finding suggests that not all students actively reflected on their first presentation in order to further develop their performance. Moreover, in order to encourage students' skills, Korthagen and Vasalos (2005) argued that the process of reflection requires considerable time for a deeper understanding, awareness of essential aspects or alternative methods of actions and also discussion about these findings in classroom.

Both the limited reflection in the self-assessment condition as well as the orientation of the rubric towards developing behaviour instead of cognition or attitude could have influenced the results. Another limitation of this study refers to the possible bias in the yield of the scientific literature aimed to formulate the hypotheses for this study. In the search strategy, only positively formulated action verbs were adopted that could have resulted in findings addressing mainly positive influences on competence, while ignoring possible studies that revealed no or negative relationships between the selected variables. Therefore, future studies conducting literature searches should take this aspect into account. Regarding the empirical findings of this study, an additional question can be raised about the scientific and practical value of the identified crucial educational design principles of peer- and self-assessment for developing presentation competence (Van Ginkel et al., 2015) as teacher feedback still seems superior. In line with this, Nicol and Macfarlane-Dick (2006) emphasized that external feedback from teachers is essential and can help substantiate student self-regulation. To further refine principles for formative assessment, formulated in previous higher education studies (Nicol & Macfarlane-Dick, 2006; Van den Berg et al., 2006), what circumstances should be created to make peer and self-assessment processes more effective for developing oral presentation competence and/or components thereof? The design of formative assessment processes in the specific field of developing academic skills leaves challenges for educational practitioners. What choices are curriculum designers advised to make within developing academic skills courses in a time when student numbers are rising (Higgins et al., 2002) while in-class instruction time and possibilities for teacher-student interactions (De

Grez et al., 2009) are decreasing? Further research is required to identify what makes teacher feedback superior and the self-assessment condition inferior. More in-depth insights into the underlying processes can help to optimise, both in the sense of effectivity and efficiency, peer feedback and self-assessment in academic skills courses.

Chapter 4

Fostering Oral Presentation Performance: Does the Quality of Feedback Differ When Provided by the Teacher, Peers or Peers Guided by Tutor?

*This Chapter is based on:

Van Ginkel, S., Gulikers, J., Biemans, H., & Mulder, M. (2017). Fostering oral presentation performance: does the quality of feedback differ when provided by the teacher, peers or peers guided by tutor? *Assessment and Evaluation in Higher Education, 42*(6), 953-966. doi: 10.1080/02602938.2016.1212984

Abstract

Previous research revealed significant differences in effectiveness of various feedback sources for encouraging students' oral presentation performance. While former studies emphasized the superiority of teacher feedback, it remains unclear whether the quality of feedback actually differs between commonly used sources in higher education. Therefore, this study examines feedback processes, conducted directly after 95 undergraduate students' presentations, in the following conditions: teacher feedback, peer feedback and peer feedback guided by tutor. All processes were videotaped and analysed using a coding scheme that included seven feedback quality criteria deduced from the literature. Results demonstrate that teacher feedback corresponds to the highest extent with the majority of the seven identified feedback quality criteria. For four criteria, peer feedback guided by tutor scores higher than peer feedback. Skills courses should incorporate strategies focused on discussing perceptions of feedback and practicing providing feedback to increase the effectiveness of peer feedback.

4.1 Introduction

A systematic review identified seven crucial design principles for developing oral presentation competence, of which three were related to strategies for formative assessment (Van Ginkel et al., 2015). Although effectiveness of the provision of feedback, peer-assessment and self-assessment were explicated, a recently conducted experimental study revealed that various feedback sources differentially influence students' presentation performance (Van Ginkel et al., 2017a). Teacher feedback proved to outperform feedback from peers, peers guided by tutors and self-assessment. While this study linked feedback source to students' performance, it did not reveal insight in quality of provided feedback in terms of content or form. It remains unclear to what extent feedback quality differs between commonly used feedback sources such as teachers and peers (Boud & Molloy, 2013; Price, Handley, Millar, & O'Donovan, 2010; Van Ginkel et al., 2017a). How do teachers versus peers provide their feedback and what kinds of aspects do they focus on? And, to what extent are these feedback processes related to theoretical and empirical insights regarding feedback quality criteria? Research should focus more on critically analysing feedback *processes*, since these are considered essential in student learning (Asghar, 2010; Falchikov, 2005; Hattie & Timperley, 2007) and, therefore, may impact students' performance. In-depth analyses of feedback processes of teachers could reveal essential elements for designing effective peer-assessment training.

Both from a scientific and a practical perspective, the research focus on in-depth analyses of feedback processes is essential, since feedback processes are evident in curricula all over the world in various domains. In higher education, pressure in terms of decreasing opportunities for teacher feedback is frequently recognized when class sizes increase, teacher staff becomes overloaded and possibilities for teacher-student interaction diminish (Boud & Molley, 2013; De Grez, Valcke, & Roozen, 2009). Thus, investigating underlying processes of various feedback sources, and of teachers in particular, could support to optimise peer feedback in future academic skills courses. Therefore, this study analyses feedback processes in conditions of feedback provided by the teacher, peers and peers guided by tutor as a follow-up research to the above-mentioned study of Van Ginkel et al. (2017a). For this purpose, the next section first identifies crucial feedback quality criteria by reviewing recent literature on feedback quality. Second, it will be described what is known about how different feedback sources (i.e. teacher or peers) adopt these criteria in their delivery of feedback. These insights will also be used to construct an instrument for analysing feedback processes for this study.

4.2 Quality criteria for feedback

A recently published review study on assessment and evaluation in higher education (Pereira, Flores, & Niklasson, 2015) revealed that especially the last decade showed many articles addressing formative assessment and modes of assessment (i.e. peer- and self-assessment) and their (assumed) effectiveness. While empirical evidence on the effectiveness of formative assessment in terms of improving student leaning and learning outcomes remains scarce (Kingston & Nash, 2011), feedback is always argued to be a critical factor in these assessment practices. Many studies exposed criteria that influence the effectiveness of feedback for actually encouraging further learning (Govaerts, Van de Wiel, & Van der Vleuten, 2013; Nicol, 2009; Nelson & Schunn, 2009). To deduce feedback quality criteria that can be used as an analysis instrument for this study on the quality of teacher or peer feedback processes, recent review articles on feedback are studied (e.g. Hattie & Timperley, 2007; Kluger & DeNisi, 1996). Further, other publications are used that provide insights about how criteria for feedback are used in feedback processes and to what extent they influence student learning (e.g. Black & Wiliam, 1998; Nicol & Macfarlane-Dick, 2006). Finally, publications are added that provide findings about how these criteria are adopted for delivering verbal feedback on students' oral presentation performance (e.g. King, Young, & Behnke, 2000; Smith & King, 2004). The next two sections will discuss quality characteristics related to content and form of feedback.

4.2.1 Content-related characteristics of feedback

Several studies revealed that feedback should be specifically related to pre-defined assessment criteria of the task (Clarke, Schull, Coleman, Pitt, & Manathunga, 2013; Hattie & Timperley, 2007; Kluger & DeNisi, 1996). This specificity of the content is frequently defined as the level of information presented in feedback messages (Goodman, Wood, & Hendrickx, 2004; Govaerts et al., 2013; Shute, 2008). It is argued that a lack of specificity encourages students to perceive the received feedback as useless (Shute, 2008), which can impede learning and frustrate learners (Moreno, 2004). Further, specific feedback has proved to outperform general advice related to performance tasks (Phye & Sanders, 1994). In line with this, Nicol and Macfarlane-Dick (2006) and Shute (2008) concluded that students should be provided with enough detailed information (but not more than that) related to all assessment criteria. In the context of developing presentation skills, the delivered feedback should explicitly focus on sub-criteria, derived from the following four main presentation criteria, as described by Van Ginkel et al. (2017a, p. 13): '*The content of the presentation (internalizing the subject of the presentation and connecting the subject to the prior knowledge of the audience), the structure of the presentation (connecting the introduction to the closing part of the presentation), the interaction with the audience (keeping the attention of the*

audience) and the presentation delivery (ensuring eye contact with the audience, an open posture and illustrative gestures and a functional use of voice).'

Besides the specificity of feedback, previous reviews on formative assessment claimed that the message of the feedback provider should be content-rich and therefore supported by content-related arguments that directly relate to the assessment criteria (Shute, 2008; Topping, 1998). Examples and elaborations of the provided feedback clarify the information intended for the receivers of feedback and offer concrete directions for improvement (Mason & Bruning, 2001). In the context of developing presentation behaviour, it is stated that this aspect of feedback encourages that reflective learning takes place, which is conditional for improving presentation performance (Van Ginkel et al., 2015). Furthermore, elaborated feedback prevents dysfunctional generalizations by students, resulting in deficient presentation skills (Haber & Lingard, 2001). An example of a content-related argument regarding the structure of a presentation is: *'The introduction of the presentation is yet partially achieved. This opening is correct regarding attracting the attention of the audience and providing a clear presentation structure. However, crucial components, such as objective and relevance, are lacking so far'.*

Another characteristic of content-related feedback is stated by researchers that the feedback message should provide information about the actual performance of the student relative to pre-defined assessment criteria of the particular task (Black & Wiliam, 1998; Kluger & DeNisi, 1996; Ng, 2014). Hattie and Timperley (2007) termed this the feed-back dimension. This aspect is perceived as one of the three essential questions to guarantee that the provided feedback is effective (Hattie & Timperley, 2007): How am I going? (feed-back); Where am I going? (feed-up); Where to next? (feed-forward). Feedback focusing directly on the actual performance reduces uncertainty of how the student is performing on a certain task (Shute, 2008). Moreover, concrete information on students' performance is stated to encourage students' motivation to adopt effective strategies for learning and achievement of next performance goals (Hattie & Timperley, 2007; Kluger & DeNisi, 1996). Considering the actual presentation behaviour of the student, feedback could be provided on the use of hand gestures as one of the crucial sub-criteria of presentation delivery (Van Ginkel et al., 2017a): *'The majority of the hand gestures are illustrative for the presentation, but at times when there is no obvious gesture to make, the hands disappear behind the back of the presenter.'*

Further, an essential aspect of the feedback message is the information provided to students about the attainment of learning goals (or an ideal level of performance) related to the task (Hattie & Timperley, 2007). Previous studies claim that this type of feedback (feed-up) can be a

powerful motivator when delivered in response to goal-driven efforts (Shute 2008). In line with this, such messages can promote goal-directed action (Hattie & Timperley, 2007), encourage persistence at task performance (Shute, 2008) and improve students' behaviour towards self-regulation (Black & Wiliam, 2009; Nicol & Macfarlane-Dick, 2006). In the context of developing oral presentation skills, feedback could be directed to the achievement of goals or improving behaviour towards an ideal standard of presentation performance as follows (De Grez et al., 2009; Van Ginkel et al., 2015): *'Ideally, the presenter uses supportive hand gestures during the presentation. At moments that these gestures are not necessary, the hands should either be naturally down at the presenters' side, up near the waist, closed loosely in front of the waist level or one hand at the waist level and one more loosely at one side.'*

Except from feedback towards the ideal standard, another crucial aspect of feedback (feed-forward) is intended to regulate and close the gap between actual performance and desired level of performance or goal (Nicol & Macfarlane-Dick, 2006). Resolving this discrepancy encourages higher levels of students' efforts to fulfill their learning goals (Shute, 2008). Further, it is stated that feedback only focusing on current performance encourages students to concentrate on the immediate goal instead of the strategies to attain the goal (Hattie & Timperley, 2007). Therefore, the provided feedback message should contain concrete advice about strategies to reduce the gap between where students are and where they are aiming to be (Sadler, 1989). In higher education settings, feed-forward relating to hand gestures during presentations (De Grez et al., 2009; Van Ginkel et al., 2017a) could be formulated as: *'During the preparation phase of the next presentation performance, the presenter could practice with using illustrative hand gestures at moments that require support. And, the presenter should practice having the hands closed loosely in front of the waist at moments that require less or no support.'*

4.2.2 Form-related characteristics of feedback

A frequently mentioned form-related characteristic of feedback is *stepwise presentation* of the provided message (Ferguson, 2011; Shute, 2008). Structuring the content offers the possibility to control for mistakes and gives learners sufficient information to correct errors on their own (Shute 2008). Presenting too much, non-structured and complex information may invoke cognitive overload for the feedback receiver (Mayer & Moreno, 2002; Nicol & Macfarlane-Dick, 2006). Therefore, elaborated feedback should be provided in *manageable units*, or small-enough pieces (Shute, 2008), ensuring that it is not overwhelming and discarded (Bransford, Brown, & Cocking, 1999). Within educational settings in which formative feedback is provided to students' development of oral presentation performance, practitioners are advised to address several aspects of the main presentation criteria in a pre-defined sequence; An example of feedback

is: *'At the start of the feedback session, attention will be provided towards personal learning goals. Then, feedback will be directed to the presentation delivery, such as keeping eye contact, ensuring an open posture, using illustrative gestures and having a functional use of voice. Finally, feedback on the content and the structure of the presentation will be deeply elaborated, since these aspects were frequently noticed by the audience during this presentation performance.'*

Another form-related characteristic of feedback is emphasized in previous studies as the importance of the way in which the feedback is formulated (Govaerts et al., 2013; Kluger & DeNisi, 1996; Nicol & Macfarlane-Dick, 2006). It is suggested that this so-called *intensity of feedback* impacts students' interpretation of feedback, which is a crucial intermediate variable for enhancing academic or professional competencies (Smith & King, 2004). Positively and constructively formulated messages by the feedback provider have proven to increase the likelihood that students will return to or persist in an activity (Kluger & DeNisi, 1996; Smith & King, 2004). Therefore, researchers in this field (Hattie & Timperley, 2007; Kluger & DeNisi, 1996) concluded that feedback should be formulated in a constructive manner by starting with positive aspects of the message and by distinguishing between behaviour that is observed, interpreted by the feedback provider and the effects of that presentation behaviour on the audience. In this example, the following feedback message focuses on students' eye contact after a presentation performance: *'The majority of the time, the presenter successfully kept eye contact with the audience. However, at several phases, the presenter used his or her notes (or cheat sheets) frequently. Therefore, the feedback provider has the impression that the presenter required considerable time to think about the content or structure of the presentation. Based on this, it is questionable to what extent the presenter thoroughly prepared the presentation performance.'*

In summary, feedback literature revealed content- and form-related characteristics of feedback that influence student learning or performance. Considering the *content*-related characteristics, feedback should: (1) specifically be related to pre-defined assessment criteria, (2) include content-related arguments that directly relate to the assessment criteria, provide information about (3) students' actual performance, (4) the ideal or desired level of performance and (5) opportunities to bridge the gap between actual and desired level of performance. Regarding *form*-related characteristics, feedback should also be (6) delivered in manageable units and (7) formulated in a positive and constructive manner. These seven quality criteria for feedback can be used for constructing an instrument to analyse feedback provided in realistic educational settings. The aim of this study is to analyse the quality of feedback in the feedback process, because this is considered as essential for student learning and could support to optimise peer feedback in future skills courses. The related research question can be formulated as "To what extent does

the quality of feedback differ between the feedback sources teacher, peers and peers guided by tutors?". Reviewing the literature revealed that no comparative studies were found about whether various sources of feedback, such as teachers, peers of tutors, adopt these quality criteria for feedback in a different way. Since empirical evidence is lacking hitherto, no hypotheses on differences in feedback quality between the various sources could be formulated for this study in advance. In line with this, possible differences in the adoption of feedback quality criteria by teachers, peers and peers guided by tutor will be researched by using explorative (two-sided) testing.

4.3 Method

4.3.1 Units of analysis

In the academic year 2013-2014, 95 feedback processes of 95 undergraduate students were videotaped within five identical oral presentation courses of a Dutch university in the domain of life sciences. Thirty-eight students followed these courses in the context of their Bachelor programme *Forest and Nature Conservation* (male=21; female=17); the other 57 students participated within the Bachelor programme *Nutrition and Health* (male=19; female=38). Each video consisted of five-minute feedback that was verbally provided directly after a undergraduate students' first oral presentation performance. In 34 of these videos, feedback was given by one of the five teachers involved in the presentation courses. These teachers were qualified 'academic skills trainers' with at least five years' experience in providing oral presentation skills courses at the university level. Twenty-seven videos showed feedback provided by a group of seven peers guided by a tutor. This tutor was a second- or third-year student acting in the role of 'student-assistant'. Another 34 videos contained feedback given by a group of seven peers without any intervention of a teacher or tutor during the feedback process. In total, five teachers (male=1; female=4), nine tutors (male=2; female=7) and 95 undergraduate students (male=38; female=57), both as presenters and feedback providers, participated in this study.

4.3.2 Context of the study

The oral presentation courses consisted of three meetings. In the first plenary meeting of each course, the rubric 'oral presentation skills', consisting of 11 sub-criteria for effective presentations derived from the four main presentation criteria (Van Ginkel et al., 2017a, see also *Instructional conditions*), was introduced by the teacher to a class with a maximum of 30 students. One week after the first session, the students were divided in smaller groups, of approximately eight students, in which each student conducted a five-minute presentation on a self-selected topic, strictly monitored by the facilitator of the particular group. This facilitator could be a teacher

or a tutor, depending on the particular feedback condition (see *Instructional conditions*). In this second meeting of the course, the feedback processes within these smaller groups, related to the specific feedback sources (teacher, peers guided by the tutor or peers without any intervention of the tutor), were videotaped. These videos were later analysed by the first author and an academic skills trainer not participating in one of the presentation skills courses of this study. In the third meeting, the students finalized the course with a second individual presentation performance. However, this part of the course fell outside the scope of this study.

4.3.3 Instructional conditions

All five presentation courses that were part of this study, were divided in the following three conditions for the second meeting: (1) teacher feedback; (2) peer feedback guided by tutor; (3) peer feedback. The participating students were randomly assigned to these conditions and performed individually an oral presentation. Further, all students in conditions 2 and 3 also participated as 'peers' in providing feedback after each presentation performance. Prior to these sessions, all teachers and tutors were individually instructed by the first author and the coordinator of the presentation skills courses. During these meetings, the teachers and tutors received similar guidelines for the *facilitation* of the feedback processes for each condition, regarding (1) the restriction of each feedback process to a maximum of five minutes to guarantee a comparable amount of provided feedback in terms of time, (2) the videotaping of all feedback processes for data analysis purposes, (3) the arrangement of tables within the classroom in U-forms to encourage interaction among peers and (4) the availability of one rubric 'oral presentation skills' for each participant (teacher, tutor or peer) to support the provision of feedback towards students' presentation performance. Previous studies demonstrated that using a qualitative rubric fosters good feedback processes that can aid student learning (Jonsson & Svingby, 2007; Panadero & Jonsson, 2013; Prins, De Kleijn & Van Tartwijk, 2015). For constructing the instrument for this study, the presentation criteria (also described as pre-defined criteria of the task in the theoretical framework), were deduced from the yield of a previously conducted systematic review (Van Ginkel et al., 2015) and four validation sessions among academic skills experts (Van Ginkel et al., 2017a). Based on seven articles (e.g. Bower et al., 2011; De Grez et al., 2009; Reitmeier & Vrchota, 2009) derived from this systematic review that actively adopted a rubric, the following strategies were formulated for constructing the instrument for this study: (1) implementing four main criteria for oral presentations (see earlier description), (2) integrating levels of the rubric that are formulated in a positive, constructive, active and qualitative manner and (3) applying a five-point scoring scale. Besides similar instructions about the *facilitation* of the feedback processes, the teachers and tutors received different information (depending on the particular condition) about the extent to which the facilitator was allowed to deliver feedback

or to intervene in the *provision of feedback*. In the first condition, the teacher both facilitated the session and solely provided five-minute feedback, whereby the rubric could be used based on own insights. This means that every individual teacher could decide the extent to which the rubric was used while providing feedback and what presentation criteria to pay attention to. Further, during the provision of feedback by the teacher in this condition, peers were not allowed to provide any feedback. In the second condition, seven peers together provided five-minute feedback after students' presentation performance. Further, the tutor in this condition facilitated the session and was also allowed to intervene in the peer feedback process and to deliver feedback. The rubric could be used by the peers or the tutor based on own insights. In the third condition, again seven peers together provided five-minute feedback after students' presentation performance. Although the tutor facilitated the session practically, this actor was not allowed to intervene in the peer feedback process or to deliver feedback. In this condition, peers decide for themselves if and how they were using the rubric and the various presentation criteria while providing feedback.

4.3.4 Dependent variables and instruments

The dependent variables consist of the extent to which each of the seven quality criteria for feedback, derived from the literature, was reflected in the feedback processes. Therefore, a coding scheme was specifically constructed for the observation of the quality criteria for feedback verbally provided directly after students' presentation performance and existed of (1) seven quality criteria of feedback and (2) a five-point scoring scale for each criterion, comparable to other assessment instruments recently used for measuring the quality of feedback in higher education contexts (Ferguson, 2011; Govaerts et al., 2013). An example of a quality criterion for feedback of the coding scheme is presented in Figure 4.1. The score for each quality criterion for feedback was determined for each condition (teacher, peers guided by tutor or peers) by taking the mean score of all feedback processes within that particular condition for that particular quality criterion.

Quality criteria for feedback	**1** (--)	**2** (-)	**3** (+/-)	**4** (+)	**5** (++)
Feedback containing <u>arguments</u> related to the four main presentation performance criteria and/or personal learning goals	Arguments related to one main criterion OR learning goals (OR "less/none") are addressed	Arguments related to two main criteria OR one main criteria and learning goals are addressed	Arguments related to three main criteria OR two main criteria and learning goals are addressed	Arguments related to all four main criteria OR three criteria and learning goals are addressed	Arguments related to all four main criteria and learning goals are addressed

Figure 4.1 An example of a quality criterion for feedback within the coding scheme

4.3.5 Data analysis

All 95 feedback processes over the three feedback conditions were videotaped with the goal to analyse these processes after the presentation meetings. The rubric 'oral presentation skills' (Van Ginkel et al., 2017a) was used as an instrument by the researcher to make notes during the first time watching each video guided by the following question: (1) Which specific main presentation criteria (i.e. the content of the presentation, the structure of the presentation, the interaction with the audience and the presentation delivery), eleven presentation sub-criteria are addressed during the five-minute feedback?; (2) Which specific presentation criteria are supported by content-related arguments as delivered by the feedback provider(s)?; (3) In which order are these presentation criteria addressed during the feedback process? The goal of this preliminary analysis for the researcher was to get a picture of the *content* and *form* of the delivered feedback. Subsequently, directly after this activity, the same video was watched again followed by the scoring of all seven quality criteria for feedback based on the coding scheme. Before assessing the delivered feedback of all conditions, two raters discussed the coding scheme to reach consensus regarding the interpretation of the seven quality criteria for feedback, their corresponding levels and scoring scale. These raters consisted of (1) the first author and (2) an academic skills trainer who was not involved as teacher or coordinator in this research project. In addition, the raters independently assessed fifteen videos that were randomly assigned from the total number of feedback processes within this study after adopting a random number generator. In order to determine degree of consistency among the raters, the interrater reliability coefficient was calculated and revealed an acceptable score (Cronbach alpha: .73). Subsequently, all 95 feedback processes were scored by the first author. Finally, statistical methods were used to analyse the data. Univariate analyses of variance were adopted to verify to what extent the scores

on the various quality criteria for feedback differed between the feedback conditions. Thereafter, Games-Howell-post-hoc analyses were conducted to determine between which feedback groups significant differences existed.

4.4 Results

This section describes (1) if significant differences in scores on the various quality criteria for feedback can be traced between the three feedback sources and, if so, (2) between which of these feedback sources significant differences exist. Table 4.1 shows the descriptives for all criteria in the three conditions.

4.4.1 Main findings

Firstly, analyses showed that significant differences between the various feedback sources exist for all of the seven quality criteria for feedback ($p < .01$; see *Table 4.1*). Secondly, findings demonstrated that the teacher feedback condition scored significantly higher than the peer feedback condition on all seven quality criteria ($p < .01$). In addition, the teacher feedback condition scored significantly higher than the peer feedback guided by tutor condition on six of the seven quality criteria of feedback ($p < .01$), except for the criterion specificity of feedback. Finally, analyses revealed that the peer feedback guided by tutor condition scored significantly higher than the peer feedback condition on the following four criteria: specificity of feedback ($p < .05$), content-related arguments ($p < .01$), ideal or desired performance ($p < .01$) and progress from actual to desired performance ($p < .01$).

Table 4.1 Descriptives of feedback criteria related to each of the feedback conditions

Feedback group	Teacher Feedback -TF-	Peer Feedback guided by Tutor -PFT-	Peer Feedback -PF-	Overall differences between feedback conditions	Differences between particular feedback conditions
1. Specificity of feedback					
Mean	3.85	3.44	2.82	F = 10.77 (**)	TF > PF; t = 1.03 (**)
Std. Deviation	0.78	0.97	1.00		PFT > PF; t = 0.62 (*)
N	34	27	34		
2. Content-related arguments					
Mean	4.53	3.07	2.44	F = 56.78 (**)	TF > PFT; t = 1.46 (**)
Std. Deviation	0.62	0.68	1.08		TF > PF; t = 2.09 (**)
N	34	27	34		PFT > PF; t = 0.63 (**)
3. Actual performance					
Mean	4.62	4.15	3.88	F = 14.91 (**)	TF > PFT; t = 0.47 (**)
Std. Deviation	0.55	0.46	0.64		TF > PF; t = 0.74 (**)
N	34	27	34		
4. Ideal or desired performance					
Mean	4.03	3.63	2.97	F = 22.16 (**)	TF > PFT; t = 0.40 (**)
Std. Deviation	0.46	0.63	0.83		TF > PF; t = 1.06 (**)
N	34	27	34		PFT > PF; t = 0.66 (**)
5. Progress from actual to desired performance					
Mean	4.50	3.89	2.97	F = 30.77 (**)	TF > PFT; t = 0.61 (**)
Std. Deviation	0.56	0.85	0.97		TF > PF; t = 1.53 (**)
N	34	27	34		PFT > PF; t = 0.92 (**)
6. Structure of feedback					
Mean	3.91	3.22	2.71	F = 13.87 (**)	TF > PFT; t = 0.69 (**)
Std. Deviation	0.90	0.75	1.12		TF > PF; t = 1.21 (**)
N	34	27	34		
7. Intensity of feedback					
Mean	4.88	4.44	4.06	F = 16.55 (**)	TF > PFT; t = 0.44 (**)
Std. Deviation	0.33	0.80	0.60		TF > PF; t = 0.82 (**)
N	34	27	34		

*Note: *p < .05; **p < .01*

4.5 Conclusions and discussion

This study aimed to examine to what extent various feedback sources, providing verbal feedback on students' oral presentation performance in a higher education setting, differentially score on content- and form-related criteria of feedback. Therefore, 95 feedback processes were videotaped and analysed in the following conditions: teacher feedback, peer feedback and peer feedback guided by tutor. Results demonstrated that differences in the quality of the provided feedback of the various feedback sources exist for all of the seven identified criteria. The teacher feedback condition scored on these quality criteria significantly higher than peer feedback with tutor guidance (on six out of seven criteria) and without guidance (on all criteria). Further, on four of the seven criteria, the peer feedback guided by tutor condition scored higher than the peer feedback condition. A previously conducted quasi-experimental study (Van Ginkel et al., 2017a) revealed that the development of students' presentation skills depended on the particular feedback source, where students who received teacher feedback outperformed students receiving feedback from other sources. This follow-up study digged deeper into the quality of the provided teacher and peer feedback and revealed that the provided teacher feedback scored significantly higher on almost all content- and form-related quality criteria for feedback than the other two conditions peer feedback guided by tutor and peer feedback. This means that the quality of feedback from teachers corresponds to a higher extent to the identified quality criteria for feedback. Taking the results of these two studies together, the feedback quality could be considered as the essential explanation for the impact of the feedback source on developing students' presentation skills. Previous studies underlined the essence of feedback quality for developing students' academic performances (e.g. Mason & Bruning, 2001; Nicol & Macfarlane-Dick, 2006; Noroozi, Biemans, & Mulder, 2016; Shute, 2008). In addition, the crucial role of the teacher in feedback processes is frequently emphasized within the 'expert literature' (Reis & Renzulli, 2010). Besides the significant value of teachers in delivering feedback for developing students' skills (Clarke et al., 2013), these experts are also highlighted as role models in student learning (Ng, 2014). Furthermore, their influence as facilitators of peer feedback processes should also be recognized, as earlier described by Van den Berg, Admiraal and Pilot (2006).

Besides the crucial role of the teacher in feedback processes, differences in feedback quality might exist between different feedback sources in different areas of knowledge and different degrees. In order to investigate such a direction for future research, a large-scale (quasi-)experimental study should be designed and implemented in which the quality of the provided feedback by teachers, peers and peers guided by tutors will be assessed in presentation courses provided within varying

domains (f.e. natural sciences, social sciences and medical sciences) in both bachelor and master programmes.

Several other factors might explain the identified results of superiority of teacher feedback like students' perceived utility of feedback, their actual use of feedback, differences between students in self-regulation skills to provide or receive feedback and differences in students' feedback preferences. The extent to which students appreciate feedback and actively use it also depend on factors like authority of the feedback provider and trust between peer students who provide and receive feedback (Shute, 2008). In this respect, it could be argued that students appreciated the feedback delivered by teachers more, because of their authority as a result of their expertise and experience comparing to peers. Also the aspect of trust, which might be lacking between peer students in feedback processes, could have had an impact on the appreciation and use of feedback and therefore differently influence students' presentation skill development.

Regarding students' use of feedback, Jonsson (2012) provided an extensive overview of factors, like (the lack of) strategies for productively using feedback and students' understanding of the adopted academic terminology. In the field of presentation research, King, Young and Behnke (2000) and Smith and King (2004) revealed that students' use of feedback and its effect on their performances can differ depending on certain characteristics of the delivered feedback (i.e. high of low feedback intensity) and characteristics of the individual student (i.e. high or low sensitivity to feedback). Smith and King (2004) discovered that students' reactions to high or low intensity feedback differed depending on their feedback sensitivity, for example high feedback-sensitive students developed more desired public speaking behaviours (like eye contact and introduction length of the presentation) in a condition where they received tactful and non-confrontational feedback (i.e. low intensity) compared to direct and frank feedback (Smith & King, 2004).

In this context, the superiority of teacher feedback in this study might also result from teachers being more able to adapt their feedback to these individual student preferences and characteristics as well as the context in which the feedback is given. This might also be the explanation for the non-significant difference between teacher and peer feedback on the quality criterion of specificity of the feedback. It could be argued that teachers, because of their expertise and experience, are more capable of identifying individual differences between students and responding to this and thus sometimes provide more specific feedback for one student, but much less specific feedback to another student. These kinds of student evaluations and experiences of the provided feedback were not collected in the present study, while they might have provided additional insights in the empirical findings.

Differences between students' self-regulation skills could influence the extent to which they are able to provide and receive feedback. Such insights about students self-regulating aspects of their thinking, motivation and behaviour during learning (Pintrich & Zusho, 2002), could be a relevant direction for future research. Finally, future studies should focus on students' needs that could differ between (1) students who want to easily reach the requirements set by the teacher (and prefer directive feedback) and (2) students who prefer to learn and develop themselves. Future research should concentrate more on the role of students' preferences, perceived utility of feedback, self-regulation skills and actual use of feedback provided to them by either teachers or peer feedback providers.

The researchers questioned whether the higher feedback quality, provided by teachers, could be related to a better use of the assessment rubric in the feedback processes. Therefore, notes that were taken by the researchers during the observations of the feedback processes were analysed as an additional step in the data analysis. Regarding the frequency of the use of the assessment instrument, it was found that teachers adopted the rubric in a more systematic way for delivering feedback related to the assessment criteria than peer feedback providers in other conditions. The applicability of the rubric showed more variation in the peers guided by tutor condition, since tutors additionally intervened and questioned the peers with the goal to provide explanations to their provided feedback. Students in the peer feedback condition adopted the rubric less systematically and therefore, they did not, in contrast to the other conditions, always reached the maximum of five minutes of feedback. For these peers, it seems difficult to adequately use the rubric without guidance and, therewith, increase the likelihood of higher feedback quality.

Since these findings are based on additional notes provided by the researchers of this study instead of data gathered based on the initial research question, this issue can be considered as a limitation of the study. Future studies should focus specifically on the relation between feedback quality and the adopted instruments in feedback processes. On the contrary, these findings suggest that using a qualitive and detailed rubric can help fostering high quality feedback, which might also give ample opportunities for better training in peer feedback and self-reflection.

In this study, peer feedback was provided by students themselves or in combination with the guidance of tutors (i.e. student-assistants). Previous researchers claimed that the quality of peer assessment could increase after students receive assessment training prior to feedback processes (Dochy, Segers & Sluijsmans, 1999). Insights from the more effective teacher feedback condition, including the more systematic use of the assessment rubric, could offer input for peer-feedback training, and thereby decrease the discrepancies between the quality of teacher and peer feedback, and its effect on student performance.

Next to the superiority of the teacher feedback condition, this study illuminates significant differences in feedback quality between peer feedback on the one hand and peer feedback guided by tutor on the other hand. An analysis on the level of the individual quality criteria for feedback showed significant differences on the content-related feedback criteria, whereas the form-related criteria did not significantly vary. For example, the feedback criterion content-related arguments scored significantly higher in the peer feedback guided by tutor condition. However, the form-related quality criteria in both peer feedback conditions scored significantly lower than the teacher feedback condition. The differential score regarding content-related criteria, in favour of the peer feedback guided by tutor condition, can be caused by the added value of the tutor in questioning, intervening and guiding peers in the feedback processes. However, the previous study did not reveal a differential influence of both peer feedback conditions on students' oral presentation skills (Van Ginkel et al., 2017a).

This finding might suggest that even though the quality of content-related feedback is higher in the peer feedback guided by tutor condition than the peer feedback condition, the effectivity in terms of impact on students' presentation skills depends to a large extent on how the feedback is actually provided (the form of feedback). If feedback is not delivered in a stepwise manner (Shute, 2008; Tomas, 2014) and/or formulated in a positive and constructive manner (Ferguson, 2011; Mayer & Moreno, 2002), than the effect on the behaviour of the feedback receiver could still be limited.

Recent studies showed insights focusing on how to prepare peers before entering formative assessment processes in higher education (Nelson & Schunn, 2009; Pereira et al., 2015). In the context of developing presentation skills, Murphy and Barry (2016) distinguished between instructing students about both (1) the quality of feedback as well as (2) group work dynamics when providing feedback on peer presentations. This study contributes to these findings by adding the essence of paying attention to seven quality criteria for feedback derived from the literature. In order to guarantee the quality of feedback provided by peers, academic skills trainers should pay considerable attention to both content-related and form-related characteristics.

While the insights of this study could be useful for educational practitioners and peer assessment training, findings of the research have scientific value for feedback theory as well. Empirical results confirm the majority of feedback literature claiming the essence of quality criteria for feedback in order to encourage students' performance (e.g. Nicol & Macfarlane-Dick, 2006; Shute, 2008). In addition, this study suggests that form-related criteria might be conditional for delivering effective content-rich feedback messages. Follow-up studies should focus on this

question. Additionally, the present findings further refine the previously identified crucial design principle of "provision of feedback" for developing presentation skills (Van Ginkel et al., 2015). This study shows that both content-related as well as form-related aspects are crucial in the delivery of feedback. In line with this, if peer feedback is considered as a powerful addition or replacement of teacher feedback, than trainer programs, prior to processes of feedback in classrooms, should critically incorporate these feedback criteria. Future studies should focus on the implementation of these criteria and the assumed effectivity of such programs prior to feedback processes in higher educational practice.

Chapter 5

Fostering Oral presentation Competence Through a Virtual Reality-Based Task for Delivering Feedback

*This Chapter is based on:

Van Ginkel, S., Gulikers, J., Biemans, H., Noroozi, O., Roozen, M., Bos, T., Van Tilborg, R., Van Halteren, M., & Mulder, M. (2019). Fostering oral presentation competence through a virtual reality-based task for delivering feedback. *Computers & Education, 134*, 78-97. https://doi.org/10.1016/j.compedu.2019.02.006

Abstract

While preceding studies stressed the importance of feedback delivered by experts, it is unexplored whether students' oral presentation competence can be fostered through innovative technology for delivering feedback. This experimental study examines the effectiveness of a virtual reality-based task, in which first-year bachelor students present in a virtual environment and receive feedback traced by the system, on students' cognition, behaviour and attitude towards presenting. The effects are compared with a control condition of a face-to-face presentation task with expert feedback. Students' performance was measured by means of multiple-choice tests, validated rubrics, and self-evaluation instruments. Results revealed significant improvements for all three components of presentation competence without a significant difference between the conditions. Further, self-evaluation tests demonstrated that students who presented in virtual reality perceived the feedback as valuable regarding the detailed and analytical characteristics. Follow-up studies should focus on to what extent virtual reality-based tasks could reduce teaching staff costs in order to make the integration of these tasks in presentation courses both effective and efficient.

5.1 Introduction

A recently conducted systematic literature review in this research field determined seven crucial educational design principles that foster students' oral presentation competence. Three of the seven principles were directly referring to formative assessment strategies, including expert feedback, peer-assessment and self-assessment (Van Ginkel et al., 2015). Although the effectiveness of these modes of feedback were explicated, a lately published experimental study demonstrated that students' presentation performance is influenced depending on the particular feedback source (Van Ginkel, Gulikers, Biemans, & Mulder, 2017a). The study revealed that feedback from teachers exceeded feedback from peers, peers guided by tutors and feedback delivered by the self. Moreover, a follow-up study demonstrated that teacher feedback scored higher than other commonly used sources, such as peers, peers guided by tutors and the self, in higher education on feedback quality criteria (Van Ginkel, Gulikers, Biemans, & Mulder, 2017b). While feedback is regarded as a compelling influencing factor on students' learning (e.g., Attali & van der Kleij, 2017; Falchikov, 2005; Hattie & Timperley, 2007; Hung, 2016; Krause, Stark, & Mandl, 2009; Mayer & Moreno, 2002; Noroozi, Biemans, Weinberger, Mulder, & Chizari, 2013; Noroozi, Weinberger, Biemans, Mulder, & Chizari,, 2013), the role of technology for practicing presentations and facilitating high-quality feedback is scarcely mentioned in the 52 studies in presentation research analysed as part of the above-mentioned systematic literature review (Van Ginkel et al., 2015). Only a few studies adopted technologies in the form of videotaping students' individual presentations for facilitating self-assessment, encouraging reflection skills and fostering students' oral presentation competence. However, researchers argued that innovative technologies, such as virtual reality-based tasks, have potential for developing students' competencies, since interactive digital learning environments can imitate real-life processes and facilitate the provision of feedback (e.g., Coller & Scott, 2009; McNamara, Jackson, & Graesser, 2009; Lee & Wong, 2014; Merchant, Goetz, Cifuentes, Keeney-Kennicutt, & Davis, 2014; Richards & Taylor, 2015). In order to explore the effects of a virtual reality-based task for practicing presentations and receiving feedback on oral presentation competence, the goals of this study were formulated as: (1) to investigate the impact of a virtual reality-based task, in which students present in a virtual environment and receive feedback traced by the system, on students' cognition, skills and attitudes towards presenting and (2) to verify the extent to which students perceive such an innovative tool as valuable for practicing presentations and receiving feedback in developing their oral presentation competence.

From a scientific perspective, these research goals are relevant, since virtual reality-based technologies are not yet applied and studied for fostering oral presentation competence, while it

is highly recommended to explore the effects of these technologies on skill acquisition in higher education (Merchant et al., 2014), Further, no earlier studies focused on integrating feedback in virtual reality-based modalities for encouraging skills, while this direction of research is strongly suggested by researchers in this field of study (Merchant et al., 2014, p. 37). Finally, only a few studies, mostly outdated regarding the state of technology (Lee, 1999), are conducted towards the perceptions of students after performing and practicing with virtual reality-based tasks for delivering feedback. A research focus on the evaluations of using the tools is important for characterizing students' attitudes as a crucial component of the construct of competence (Mulder, 2014).

From an educational practice perspective, the described research foci are essential, since many educators around the globe, in varying domains, aim to develop both effective and efficient learning environments that foster students' oral presentation competence. Virtual reality tools, including practicing presentations and receiving feedback, could therefore be an interesting option for curriculum designers, especially in times when student numbers are rising, while instructional time per student and possibilities for teacher-student interactions are decreasing (Van Ginkel et al., 2017a).

The following sections briefly elaborate on (1) the adoption of virtual reality-based tasks in educational practice and (2) the potentials of these technologies for developing students' competencies in the higher education context.

5.2 Virtual reality: challenges and potentials for higher education

This section focuses on challenges and potentials of the adoption of virtual reality-based tasks in higher education. Further, results distracted from research on virtual reality influencing learning outcomes is briefly summarised based on five review studies (Hew & Cheung, 2010; Lee, 1999; Merchant et al., 2014; Sitzmann, 2011; Vogel, Vogel, Cannon-Bowers, Bowers, Muse, & Wright, 2006). These reviews were selected for this study, because they (1) directly relate virtual reality-based tasks to learning outcomes and (2) are published in the context of higher education.

5.2.1 Challenges for adopting virtual reality in education

Increasingly, resources in terms of finance and time are being deployed to the design and development of virtual reality-based instruction within higher education curricula (Merchant et al., 2014). This technology was first traced in the entertainment sector in the sixties of the last century (e.g., Hew & Cheung, 2010; Merchant et al., 2014). Two decades later an increase

in popularity towards virtual reality technology was also recognized in the field of professional education and training. One of the examples of the use of these technologies was applied to prepare pilots on their actual flying task (Hawkins, 1995). Designers of these projects adopted varying devices such as headphones, special glasses and powerful computers for facilitating the entire learning experience (e.g., Dubovi, Levy, & Dagan, 2017; Jang, Vitale, Jyung, & Black, 2017; Lorenzo, Lledó, Pomares, & Roig, 2016). However, previous publications revealed several concerns regarding the implementation of such technology in realistic higher educational settings (Merchant et al., 2014). Several reasons, such as lack of financial feasibility (Andolesk, 1995), negative perceptions of users regarding their psychological and physical state after experiencing (Nichols & Patel, 2002) and inferior technological design of these virtual reality settings (Chen, Toh, & Ismael, 2005; Riva, 2003) prevented a wider adoption of these technologies in schools.

5.2.2 Potentials for virtual reality in higher education

Despite these earlier problems regarding the technology, several factors encouraged the adoption of virtual reality in education. Over the years, computers became more powerful, costs for integrating these technologies in education dropped significantly and high-speed connections to the world wide web reached a larger user audience. The main reason for increasingly implementing virtual reality-based technology in instruction is the potential for enhancing students' competencies. Several educators have used these technologies for teaching of mathematical concepts (Pasqualotti & Freitas, 2002), learning about theories in physics (Coller & Shernoff, 2009) and developing 21st century skills, such as research and communication skills (Galas & Ketelhut, 2006). Virtual reality-based technologies can be considered as interactive digital learning environments that imitate real-life processes or situations (Merchant et al., 2014). These environments facilitate students to develop their learning processes and performances (De Jong, 1991). Moreover, virtual reality technologies have the potential to practice competencies needed in real-life anytime and anywhere regarding its portability and cost-effectiveness (e.g., Merchant et al., 2014; Tobias & Fletcher, 2010).

5.2.3 Summary of previous reviews on virtual reality and impacts on learning outcomes

Previous meta-analyses revealed an ambiguous picture considering the impact of virtual reality-based technology on fostering students' competencies. An earlier review study revealed positive relationships between these types of tasks and performances. However, negative results were determined relating to students' perceptions of adopting this mode of technology for learning purposes (Lee, 1999). Other meta-analyses (Sitzmann, 2011; Vogel et al., 2006) reported several positive impacts on learning outcomes as self-efficacy, knowledge and retention, whereas a recently conducted meta-analysis showed a more nuanced overview of virtual reality-based

learning environments influencing learning outcomes (Merchant et al., 2014). This research analysed 29 studies incorporating a simulation tool in an experimental or quasi-experimental setting and revealed effectivity in improving learning outcome gains related to cognition, skills and attitudes. However, the authors emphasized certain design characteristics of virtual reality-based learning environments that can be considered as more, less or equally effective for encouraging these components of competence. To start with, students improved more in their learning when virtual reality was implemented as a practice session comparing to a situation in which the technology was solely used as a stand-alone configuration (Merchant et al., 2014; Sitzmann, 2011). Moreover, it was found that students, exercising within virtually simulated environments, significantly increased their achievements in a context where they performed on an individual task instead of a collaborative task. Further, results revealed that the benefits of practicing in a virtual environment are not dependent on whether students are assessed immediately after the performance or when the testing is delayed (Merchant et al., 2014, p. 36). Another finding of the study (Merchant et al., 2014) is that publications regarding impacts of virtual reality-based tasks, in combination with feedback modalities, on developing students' skills remain scare. Since previous literature emphasized that feedback has tremendous impacts on learning gains (Hattie & Timperley, 2007), the researchers recommended follow-up studies investigating the impacts of virtual learning tasks combined with virtual feedback on developing students' competencies in these specific, virtual environments (Merchant et al., 2014).

Thus, although the integration of virtual reality-based tasks in higher education is increasing, previous studies revealed ambiguous results considering the impact of such innovative technologies on learning outcomes. Further, (1) the potentials of virtual reality-based tasks for developing students' cognition, skills and attitudes towards presenting, (2) the integration of feedback in such modalities and (3) perceptions of students towards both practicing presentations and receiving feedback are not yet researched. Since little evidence is found about differential effects of virtual reality-based tasks combining practice and feedback in comparison to traditional forms of expert feedback, the potential impact of virtual reality on fostering oral presentation competence will be researched in this experimental field study by using explorative testing.

5.3 Method

5.3.1 Participants and context of the study

The field experiment was carried out in the context of life sciences within a Dutch research university. In the autumn of 2016, 36 first-year bachelor students followed an oral presentation course. The majority of participants (69%) were male; only 31% were female. This course was

an obligatory course for bachelor students in which students acquire skills into how to give a public speech or a presentation in academic and non-academic settings. Specifically, the course offered students the possibility to discover and practice the skills that are necessary to deliver an authentic and persuasive presentation in an academic context. The design of this skills course was related to the crucial components for constructing effective and efficient learning environments fostering presentation competence as previously addressed in a systematic review study (Van Ginkel et al., 2015). First of all, regarding the component 'instruction', all students had (1) to formulate learning objectives regarding their own oral presentation competence and (2) to individually conduct two presentations of five-minutes each during the course. Further, relating to the component 'learning activities', students were required (3) to observe presentation models of peers and experts and (4) to practice their presentation skills within individual and group tasks. Lastly, considering the 'assessment strategy', students were (5) guided in delivering feedback that should be formulated in a constructive manner, (6) involved as peers in giving and receiving feedback and (7) facilitated to learn from self-assessment and reflection by watching back their own presentation behaviours on video. Regularly, all these seven essential strategies for encouraging oral presentation competence were guaranteed in the constructed presentation skills course. However, in this experiment only principles four and five (e.g., the opportunity to practice a presentation and the provision of feedback) were manipulated.

Considering the set-up of the study, three sessions, with a week between each of these sessions, can be identified. The first plenary meeting was intended to construct individual learning objectives, to learn from observing presentation behaviour and to develop feedback skills. In the second session, students performed their first individual presentation of five minutes on a self-selected topic in the setting of a smaller group of seven or eight students facilitated by a teacher or tutor. Finally, during the third session, students conducted their second presentation, again of five minutes on a self-selected topic. During that phase, that is between the first and the second presentation performance, the most progress can be expected (Calcich & Weilbaker, 1992). After the second session, and a couple of days before the third, students in the experimental group practiced their presentation in a virtual reality environment and received feedback from an expert (i.e., an experienced teacher) on three presentation delivery aspects as registered by the computer system (i.e. use of voice, eye contact, and posture & gestures). The control group consisted of students practicing their presentation face-to-face with an expert and also received feedback on the same presentation delivery aspects as in the experimental group after their performance, though not supported by digital data registered by a computer system. Previous research showed that the expert (i.e., an experienced teacher) is the most effective feedback

source, commonly used in higher education practice, for fostering presentation performance (Van Ginkel et al., 2017a).

5.3.2 Instructional conditions

The participants of this experiment were randomly designated to one of the subsequent feedback groups: (1) virtual reality-based task (n=17) and (2) the control condition (n=19). The experimental condition consisted of conducting a five-minute individual presentation on a self-selected topic in front of a virtual audience (see also Fig. 1) in a virtual presentation room by using a virtual reality glass and an additional headphone. Moreover, the presenter received, after the performance, feedback on presentation delivery aspects (i.e. use of voice, eye contact, and posture & gestures) registered by the computer system and explained by an external feedback source, the expert (i.e., an experienced teacher). This provision of feedback consisted of five minutes, based on a report produced via the software. Examples of this report are presented in Fig. 2 and Fig. 3. The first graph shows the speech frequency, measured in Hertz during the presentation performance, that can be considered as an essential aspect of presentation delivery for keeping the attention of the audience (see Fig. 2). The second graph shows information about the speech rate, in terms of words per minute, that can influence the extent to which people in the audience comprehend the content of the presentation (see Fig. 3). These types of reported aspects could provide a detailed analysis of how the presenter performed during the presentation on specific presentation delivery aspects and could therefore provide quantified information about students' actual performance (e.g., Hattie & Timperley, 2007; Van Ginkel et al., 2017b). These types of reported aspects could provide a detailed analysis of how the presenter performed during the presentation on specific presentation delivery aspects and could therefore provide quantified information about students' actual performance (e.g., Hattie & Timperley, 2007; Van Ginkel et al., 2017b).

Figure 5.1 A visual representation of the virtual audience

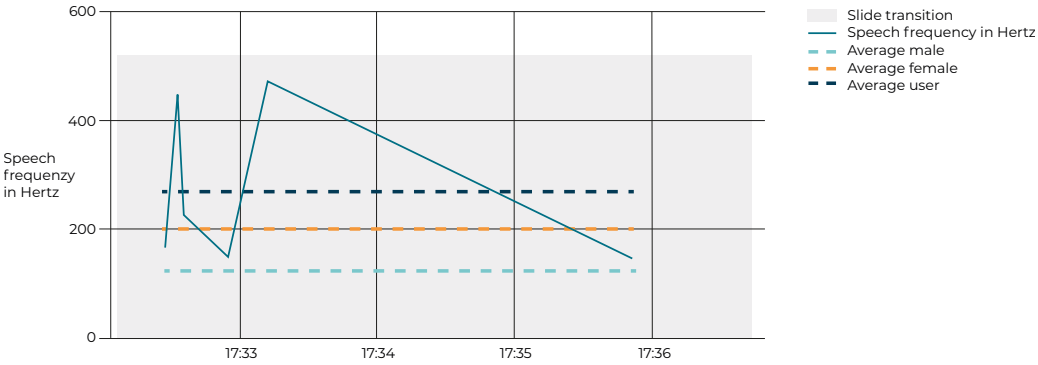

Figure 5.2 Speech frequency in Hertz

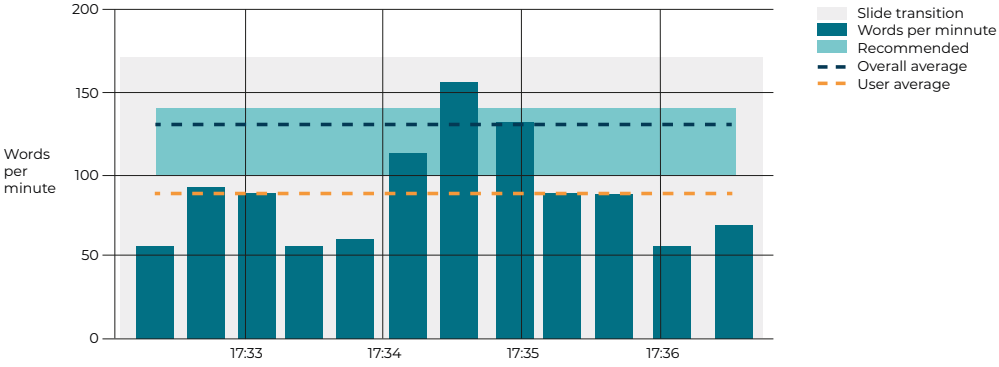

Figure 5.3 Speech rate in words per minute

The control group reflected the performance of an individual presentation of five minutes on a self-selected topic face-to-face with an expert. Directly afterwards, the presenter received five minutes of feedback on presentation delivery aspects observed and explained by the expert based on the rubric 'oral presentation skills' (see for rubric next section). These experts acquired more than five years' experience in providing public speaking courses at the level of higher education or in training professionals. Prior to the intervention, all experts were individually debriefed by the course leader of the presentation skills course and the first author. Within these sessions, the experts were identically instructed about how to facilitate the feedback processes in both conditions, relating to: (1) the procedure for the individual presenter containing instruction about the presentation performance and receiving feedback, (2) the provision of feedback restricted to five minutes in order to assure similar feedback time and (3) the availability of one rubric 'oral presentation skills' for each expert to guide the delivery of feedback after students' performance only relating to the three above-mentioned presentation delivery aspects. Adopting rubrics to improve feedback processes with the aim to further enhance learning outcomes has been exhibited in previous studies in the field of higher education (e.g., Jonsson & Svingby, 2007; Panadero & Jonsson, 2013; Prins, De Kleijn, & Van Tartwijk, 2015). Except from the identical instructions to facilitate feedback processes, the experts obtained differential guidelines specified for the particular condition concerning: (1) the environment of students' presentation practice task (this could be the virtual reality environment or face-to-face with an expert) and (2) the adoption of a feedback report produced by the computer system supporting the delivery of feedback by the expert (only available in the experimental group).

5.3.3 Dependent variables and instruments

Students' cognition, behaviour and attitude towards presenting were tested in a pre- and post-test situation. Subsequently, students' perceptions regarding the value of the course, the task for practicing their presentation, either in a virtual or face-to-face environment, and the received feedback, with or without the digital feedback data registered by the computer system, were traced through an evaluation questionnaire (post-test only) after the last presentation performance.

First, measuring students' cognition towards presenting was conducted by two multiple-choice tests. The first was carried out at the beginning of the first plenary session of the course (pre-test) and the second one after students' second presentation performance (post-test). These tests contained six questions directly relating to the core criteria for delivering presentations deduced from the literature (Van Ginkel et al., 2015; Van Ginkel et al., 2017a), encompassing: the content and structure of a presentation, the interaction with the audience and presentation delivery aspects. Scores were determined by taking the total amount of right answers. For both pre-

test and post-test, adequate reliability coefficients for this instrument were reported (Cronbach alpha: .78 and .77 respectively).

Second, assessing students' presentation performances was based on a previously validated rubric 'oral presentation skills' (Van Ginkel et al., 2017a). This rubric consisted of: (1) 11 sub criteria as part of the main criteria for delivering oral presentations, (2) presentation performance levels and (3) qualitative descriptions of these presentation behaviours reflected at each specific level. An example of how one sub criterion was formulated within the rubric is demonstrated in Fig. 4 (see also Van Ginkel et al., 2017a). Evaluating students' presentation skills was carried out by the teacher or tutor responsible for guiding the feedback processes of the students during the presentation in the smaller groups in the second and third meeting of the course. These teachers and tutors were trained in using the rubric instrument during one plenary meeting and individual coaching prior to the experiment. Further, the performance assessments were conducted by the same person in the pre- and post-test. Scores were completed by calculating the average of grades on each of the 11 sub criteria. More specifically, since the feedback in both conditions was focused on presentation delivery aspects, the scores of students' presentation performance on only these three aspects (use of voice, eye contact and posture & gestures) were determined as well. In accordance with a previous experiment in which the same validated instrument was adopted (Van Ginkel et al., 2017a), the reliability coefficient was high for both pre-test and post-test of this instrument (Cronbach alpha = .74 and .78 respectively).

	++ **(10)**	+ **(8)**	+/- **(6)**	- **(4)**	- - **(2)**	**Score**
Posture and gestures	The student is able to maintain an open posture continuously with illustrative gestures.	The student is able to maintain an open posture for most of the time with supporting gestures.	The student is able to maintain an open posture on a regular basis, both with supporting and non-supporting gestures.	The student is able to maintain an open posture occasionally with mainly non-supporting gestures.	The student has an unstable or closed posture for most of the time with non-supporting gestures.	

Figure 5.4 An example of a sub criterion within the rubric oral presentation skills

Third, students' shift in attitude towards presenting was tested by self-evaluating students' perceptions regarding their challenge, motivation and relevance of performing a presentation (Van Ginkel et al., 2017a). These tests consisted of five propositions scored on a five-point scale.

One assessment was completed in the first plenary session (pre-test) and the other after the second presentation performance (post-test). Scores were calculated by taking the averages of the five items of the test. Comparable to a previous study (Van Ginkel et al., 2015), an adequate score was reflected in the reliability coefficient (Cronbach alpha: .77).

Finally, after the second presentation performance, an evaluation questionnaire (post-test only) was completed by all individual students. The instrument consisted of seven closed questions on a five-point scale and four open questions. Three closed questions refer to generic issues considering the relevance of the presentation skills course for (1) developing presentation skills, (2) motivating to develop presentation skills and (3) receiving useful feedback on presentation performances. The other four closed questions are related to perceptions of specific characteristics of the described feedback conditions, namely: (4) the extent to which students perceive the presentation task as a realistic preparation for their final presentation, (5) whether the presentation task motivates to practice a presentation, (6) the value of the received feedback after the presentation task and (7) the recommendation to other students to fulfil the presentation task either in a virtual environment or face-to-face. Subsequently, open questions were presented focusing on: (1) on which aspects of non-verbal communication students receive feedback from the expert, (2) whether they missed any feedback, (3) to what extent they perceive the presentation task as valuable for improving their oral presentation competence and (4) whether students from the experimental group perceive the virtual reality task as a replacement for a face-to-face presentation in educational practice.

5.3.4 Data analysis

For tracing students' progress relating to one of the three components of oral presentation competence, paired-samples t-tests were enforced for both the experimental as well as the control condition. Further, repeated measurement ANOVAs were applied in order to corroborate to what extent the developments in cognition, skills and attitudes towards presenting were depended on the particular feedback group. Further, independent-samples t-tests were conducted to compare students' evaluation scores between the feedback conditions on the closed questions of the test. Finally, the answers on the open questions were collected and then categorized using the inductive thematic analytical technique (Hayes, 2000), as recently applied in comparable studies focusing on the development of competencies in the higher education context (i.e., Popov, Noroozi, Barrett, Biemans, Teasley, Slof, & Mulder, 2014). Subsequently, the deduced tables were interpreted based on the descriptive data without performing statistical analyses, since the expected values in the cells of the crosstabs procedure failed to reach the minimal requirements.

5.4 Results

First of all, outcomes related to the potential impact of the virtual reality-based task for delivering feedback on students' development in knowledge, skills and attitudes towards presenting will be described. Further, students' perceptions regarding the value of this task for practicing their presentation and delivering feedback and, therefore, improving their oral presentation competence are shown in the second part of this section.

5.4.1 Students' progress in components of presenting

Firstly, students' cognition towards presenting increased significantly ($t(35) = -7.13$; $p < .01$) between the first and second presentation in both conditions (see Table 5.1). However, no differential impact between the virtual reality-group and the control condition could be stated ($F(1, 35) = .00$; $p = .98$).

Secondly, students' presentation performances improved significantly ($t(33) = -8.31$; $p < .01$) in both feedback groups (see Table 5.1). Further analysis revealed no differences in presentation development between the two conditions ($F(1, 33) = .02$; $p = .89$). Also for presentation skills, progress specifically related to presentation delivery aspects (use of voice, eye contact and posture & gestures) disclosed no significant differences between the two feedback groups ($F(1, 33) = .32$; $p = .58$).

Thirdly, students' development in presentation attitude turned out to be significant ($t(35) = -3.10$; $p < .01$) in both the experimental as well as the control condition (see Table 5.1). Similar to the other components of competence, no differential impact on students' attitude towards presenting was found ($F(1, 35) = .03$; $p = .87$).

Table 5.1 Descriptive information of oral presentation competence for the two conditions

Variables	Conditions	Pre-test	Post-test	Mean difference
Cognition	***1. Virtual Reality***			
	Mean	4.41	5.65	1.24**
	Std. Deviation	1.00	0.61	1.09
	N	17	17	17
	2. Control Group			
	Mean	4.16	5.42	1.26**
	Std. Deviation	0.76	0.77	1.05
	N	19	19	19
	Total			
	Mean	4.28	5.53	1.25**
	Std. Deviation	0.88	0.70	1.05
	N	36	36	36
Behaviour	***1. Virtual Reality***			
	Mean	7.18	7.97	0.79**
	Std. Deviation	0.83	0.73	0.58
	N	17	17	17
	2. Control Group			
	Mean	7.11	7.88	0.77**
	Std. Deviation	0.50	0.37	0.52
	N	17	17	17
	Total			
	Mean	7.15	7.93	0.78**
	Std. Deviation	0.67	0.57	0.55
	N	34	34	34
Attitude	***1. Virtual Reality***			
	Mean	3.68	3.87	0.19*
	Std. Deviation	0.61	0.60	0.42
	N	17	17	17
	2. Control Group			
	Mean	3.65	3.86	0.21*
	Std. Deviation	0.65	0.66	0.38
	N	19	19	19
	Total			
	Mean	3.67	3.87	0.20**
	Std. Deviation	0.62	0.62	0.39
	N	36	36	36

*Note: *p<0.05; **p<0.01.*

5.4.2 Students' perceptions regarding the presentation tasks for delivering feedback

The results on the first three generic items of the evaluation questionnaire revealed acceptable scores for both conditions (all scores were more than 4.0 out of 5.0; see Table 5.2), but no significant differences were found between the two feedback conditions on: (1) developing presentation skills ($F(1, 35) = 1.53$; $p = .60$), (2) motivating to develop presentation skills ($F(1, 35) = 0.15$; $p = .77$) and (3) receiving useful feedback on presentation performances ($F(1, 35) = 0.96$; $p = .50$). Further, the other four questions are referring to perceptions of specific characteristics of the two feedback conditions. Although students did not differentially evaluate the extent to which the presentation task motivates to practice a presentation ($F(1, 35) = 0.25$; $p = .37$) or the value of the received feedback after the presentation task ($F(1, 35) = 4.52$; $p = .31$), significant differences were found for questions 4 and 7. First, students who presented in the virtual reality condition scored significantly lower than the control condition regarding the extent to which they perceive the presentation task as a realistic preparation for their final presentation ($F(1, 35) = 0.18$; $p < .01$). Second, students in the experimental condition also scored significantly lower on the question whether they would recommend other students to fulfil the presentation task in the environment in which they had practiced themselves ($F(1, 35) = 3.88$; $p < .01$).

Table 5.2 Descriptive information of evaluation aspects for the two conditions

Evaluation aspects		Virtual Reality	Control Group	Differences between conditions
1. This course was valuable for developing my presentation skills				
	Mean	4.65	4.55	0.10
	Std. Deviation	0.49	0.61	
	N	17	20	
2. This course motivates me to develop my presentation skills				
	Mean	4.24	4.30	0.06
	Std. Deviation	0.75	0.57	
	N	17	20	
3. During this course I received useful feedback on my presentations				
	Mean	4.65	4.50	0.15
	Std. Deviation	0.61	0.69	
	N	17	20	
4. This presentation task was a realistic preparation for my final presentation				
	Mean	2.35	4.30	1.95**
	Std. Deviation	0.93	0.87	
	N	17	20	
5. This presentation task motivates me to practice my presentation.				
	Mean	3.71	4.00	0.29
	Std. Deviation	0.92	1.03	
	N	17	20	
6. The feedback that I received after this presentation task was valuable				
	Mean	4.12	4.40	0.28
	Std. Deviation	0.60	1.00	
	N	17	20	
7. I would recommend other students to fulfil this presentation task				
	Mean	3.53	4.65	1.12**
	Std. Deviation	1.01	0.59	
	N	17	20	

*Note: *p<0.05; **p<0.01.*

Based on the evaluation questionnaire, the answers related to the four open questions were analysed as well. Table 5.3 revealed insights on which aspects of non-verbal communication students reported having received feedback in both conditions. All sub-criteria related to non-verbal communication (i.e., use of voice, eye contact, posture and gestures), as addressed in the rubric 'oral presentation skills', are identifiable in both groups. However, students who presented in the virtual reality condition reported having received relatively more feedback (45 percent of the total feedback in this condition) on aspects related to the 'use of voice' (i.e., articulation, intonation, words per minute) in comparison to the control group (27 percent of the total feedback). With regard to feedback on aspects that were perceived as 'missing' by the students, differences between the conditions are reflected in Table 5.4. Although students in both conditions missed feedback on the content and structure of their presentation to some extent, students from the experimental condition also noticed a lack of feedback on posture, gestures and movements (24 percent of the total 'missed' feedback), on the effect of their presentation on the audience (24 percent of the total 'missed' feedback) and on facial expressions and mimicry (14 percent of the total 'missed' feedback). Fifty-two percent of the remarks in the control condition expressed that students did not miss any feedback at all. Differences in perceptions between the two conditions are also evident referring to Table 5.5 about the perceived value of the presentation task for developing students' oral presentation competence. Although students in both conditions consider 'practicing their presentation' as equally relevant for their presentation competence development (in both conditions: 18 percent of the students), they differ in opinions about the explanation why the feedback related to these tasks was perceived as relevant. While students in the control condition emphasized 'the diversity of feedback aspects' (39 percent versus 0 percent in the experimental group) and the extent to which the feedback was 'constructive, positively formulated with tips and tricks' (26 percent versus 5 percent in the experimental condition), students in the experimental condition described that the feedback they received was detailed and analytical (50 percent versus 13 percent in the control condition). Further, students who presented in this condition pointed out that they perceived the presentation task as relevant, but missed the tension and interaction with a real audience (13 percent versus 4 percent in the control condition). Finally, students were asked whether they perceived the virtual reality-based task as a replacement for a face-to-face presentation task (see Table 5.6). The majority of the students within this group (71%) considered this task as complementary next to a face-to-face presentation task, since virtual reality offers the opportunity to deliver detailed and analytical feedback, however, a realistic audience is missing so far.

Table 5.3 Delivered feedback on non-verbal communication aspects (in numbers of students)

Non-Verbal Communication	VR-condition		Control Gr.	
	Absolute	*Percentage*	*Absolute*	*Percentage*
Use of Voice	17	45%	15	27%
Eye Contact	5	13%	5	10%
Posture	9	24%	15	27%
Gestures	3	8%	10	18%
Remaining aspects	4	10%	10	18%
Total	**38**	**100%**	**55**	**100%**

Examples of Remaining aspects: breathing, facial expressions, enthusiasm

Table 5.4 Missed feedback on a variety of aspects

Variety of Aspects	VR-condition		Control Gr.	
	Absolute	*Percentage*	*Absolute*	*Percentage*
Content of Presentation	1	5%	3	12%
Structure of Presentation	4	19%	5	20%
Posture, Gestures and Movements	5	24%	0	0%
Effect on Audience	5	24%	1	4%
Nerves	0	0%	2	8%
Facial Expressions, Mimicry	3	14%	0	0%
Use of Words	1	5%	1	4%
No Feedback Missed	2	9%	13	52%
Total	**21**	**100%**	**25**	**100%**

Examples of Remaining aspects: breathing, facial expressions, enthusiasm

Table 5.5 Perceived value of the presentation task for developing oral presentation competence

Answers	VR-condition		Control Gr.	
	Absolute	*Percentage*	*Absolute*	*Percentage*
Relevant, because of detailed, analytical feedback	11	50%	3	13%
Relevant, because of diversity of feedback aspects	0	0%	9	39%
Relevant, because of constructive feedback, positively formulated with tips & tricks	1	5%	6	26%
Relevant, because practicing is good for developing presentation competence	4	18%	4	18%
Relevant, but tension and interaction with audience were missing	3	13%	1	4%
Relevant, but possibilities to walk and tracing gestures were missing	2	9%	0	0%
Not relevant, because the activity was not realistic	1	5%	0	0%
Total	**22**	**100%**	**23**	**100%**

Table 5.6 VR-based task perceived as replacement for face-to-face presentation task

Answers	VR-condition	
	Absolute	*Percentage*
Replacement, especially for aspects as 'Use of Voice'	2	12%
Complementary, VR offers analytical feedback, but not (yet) a realistic audience	12	71%
No Replacement, a real audience is essential for realistic interactions	3	17%
Total	**17**	**100%**

5.5 Conclusions and discussion

Within the context of higher education, this study aimed to examine the effectiveness of a virtual reality-based task, for practicing presentations and facilitating feedback, on the following essential components of students' presentation competence development: cognition, behaviour and attitude towards presenting. Learning outcomes demonstrated significant progress of all three components between the first and second presentation performances in both the experimental condition as well as the control condition of regular expert feedback. In line with the results of a previous experiment in this field of research (Van Ginkel et al., 2017a), the assumption of the strong interrelationship between these aspects of oral presentation competence was again emphasized (Mulder, 2014; Mulder & Winterton, 2017; Van Ginkel et al., 2015). However, no differential impact between the experimental and control condition was traceable for one of these components in students' presentation development. Although these conditions differed in terms of the environment for practicing a presentation and the provided feedback, the lack of differences in impact might be caused by the presence of an expert for delivering feedback in both conditions. Within the higher education 'expert literature', teachers are regularly highlighted as crucial actors in encouraging student learning (Reis & Renzulli, 2010). Besides their essential function as role models for their students (Van Haaren & Van der Rijst, 2014), teachers also act as crucial facilitators of verbal feedback in developing students' competencies (Porte, Xeroulis, Reznick, & Dubrowski, 2007). More specifically, within presentation skills courses, teacher feedback corresponds to the highest extent with feedback quality criteria in comparison to other commonly used feedback sources in tertiary education (Van Ginkel et al., 2017b). Thus, the support of teachers in providing high quality feedback could have encouraged students' development in oral presentation competence in both the experimental as well as the control group.

Other arguments for the lack of differences between the conditions can be deduced from the evaluation questionnaire completed by all participating students. Although students differed in opinions regarding (1) the perception of the task as a realistic preparation for their final presentation and (2) whether they would recommend a presentation task in such an environment, no significant differences were found for two essential principles for developing presentation competence. Since students in both conditions scored acceptable and comparable relating to practicing a presentation and the value of the received feedback, it could be argued that both crucial characteristics of the learning environment (Van Ginkel et al., 2015) were ensured in both conditions to support their learning processes. Although the input for the expert differed between these conditions, the results turned out to be comparable. Further, answers on the

open questions of the same questionnaire revealed that, though students score not significantly different regarding the discussed two main principles, they vary in their arguments. While students in the control group appreciate the received feedback because of the diversity in aspects and the way it was formulated in a constructive manner, students from the experimental condition emphasized the detailed and analytical characteristics of the received feedback. These insights should encourage a further refinement of the earlier presented design principle about the type of feedback in developing oral presentation competence (Van Ginkel et al., 2015), since, besides the diversity and constructiveness of feedback, analytical characteristics of feedback should be integrated in this principle to guarantee the provision of high quality feedback messages. In line with other researchers in this field (e.g., Merchant et al., 2014; Sitzmann, 2011; Vogel et al., 2006), adopting such an innovative technology in higher education curricula should not be realised without a careful integration of both design characteristics concerning face-to-face and virtual reality. Nevertheless, challenges for increasing the value of virtual reality-based tasks remain, since students reported several 'missing' non-verbal communication aspects in their received feedback messages and a lack of tension and interaction with the audience in the virtual environment.

Since the effects of both the experimental and control condition on oral presentation competence development are comparable, a potential barrier - for adopting virtual reality in education - is removed for curriculum designers. The use of virtual reality in higher education could generate financial savings if it could partly substitute the role of the teacher. However, as earlier mentioned, the teacher still plays an important role as a feedback provider. Though, virtual reality-based technologies also have the opportunity to deliver 'immediate' feedback generated by the system and could therefore, potentially, replace the teacher in delivering feedback. This suggestion could be considered as an essential direction for future research (see 'research agenda' below). Another option is to train students in reading the 'delayed' feedback that is delivered in reports generated by the system. As a consequence, student could interpret these reports without the intervention of a teacher.

A severe limitation of this study concerns students' unfamiliarity with adopting virtual reality for learning purposes, as earlier addressed by Hew and Cheung (2010). This aspect could have influenced the results, both in terms of impacts on developing oral presentation competence as well as perceptions towards using the innovative technology. Despite the point of unfamiliarity in the experimental condition, it is noteworthy that both conditions lead to similar effects. In this study, students in the experimental condition only received five minutes of instruction before conducting their presentation in virtual reality. Taking this into consideration, more attention in research and

practice should be devoted to train participants prior to the experience of a virtual reality-based task. In line with Van Ginkel et al. (2015), instructing students about virtual reality, setting personal learning objectives, modelling other presenters in such an environment, practicing a mini-presentation in virtual reality and receiving feedback registered by the system could be regarded as essential characteristics of a training program for students entering virtual environments.

Taking the findings and limitations of this study together, future studies should focus on manipulating characteristics of the learning environment potentially encouraging the impact of virtual reality-based tasks that foster oral presentation competence. Inspired by the suggestions of Hew and Cheung (2010), longitudinal studies could reveal (1) if oral presentation performances can be influenced when participants get more familiar with the technology first and (2) whether students' perceptions of virtual reality change over a longer period of time. Further, future studies could concentrate on the potentials of combining different types of feedback for developing students' oral presentation competence, like diverse, constructive and analytical feedback, guided by experimental designs. Moreover, virtual reality technology also has the opportunity to deliver both 'delayed' feedback (as is the case in this study), based on a report and explained by an expert, as well as 'immediate' feedback directly traced and reflected by the system in the virtual learning environment. This could be an interesting option for follow-up studies, since researchers in the field of presentation research (King, Young, & Behnke, 2000) revealed that immediate feedback could improve presentation delivery aspects (e.g., stimulating eye contact), whereas delayed feedback is more effective to encourage presentation aspects that require deliberative and effortful processing (e.g., altering the length of an introduction of a presentation). The added value of 'immediate feedback' through virtual reality is that it could replace the role of the teacher as feedback provider. Other directions for future research concern distinguishing between student characteristics in learning through a virtual reality-based task (Vogel et al., 2006), since Chen et al. (2005) reported that students could differ in perceptions towards virtual reality depending on their preferred learning activities. In line with this, it is questionable whether students vary in their preference of detailed and analytical feedback as reported in the evaluations of the experimental group in this explorative study. Other characteristics related to the actor 'student' and relevant for future research in this specific research field are potential differences in perceptions towards virtual reality between (1) experienced and non-experienced students, (2) students from different sociocultural traditions – like teacher-centred versus student-centred higher educational curricula – (see Hew & Cheung, 2010) and (3) students from different content domains, since they could have different personal goals (De Kleijn, Meijer, Brekelmans, & Pilot, 2012) or learning styles and therefore could differ in perceptions about the value of feedback types for developing their presentation competencies.

Finally, several implications for educational practice remain concerning the adoption of virtual reality-based tasks for practicing presentations and delivering high quality feedback. Firstly, according to the results of this study, the interaction with the virtual audience and tension of presenting should be further developed from a technological perspective to imitate real-life experiences for developing this competence to a higher extent. Secondly, both for practicing presentations as well as for delivering high quality feedback, virtual reality-based tasks should be integrated in educational practice next to face-to-face learning processes, since a virtual reality-based presentation task has proved to be even effective as a condition with a face-to-face presentation with expert feedback and because of the complementary feedback delivered after a virtual reality-based task. To prevent the adoption of stand-alone activities (Sitzmann, 2011), in skills courses for example, teachers, tutors and students should be specifically trained before entering the learning environment and ensuring the delivery of feedback that is both diverse, constructive as well as detailed and analytical in nature. However, more research is needed focusing on how, and under which conditions, virtual reality-based tasks could replace the role of the teacher in order to make the integration of these tasks in presentation courses both effective and efficient. Finally, although innovative technologies are increasingly adopted in higher education curricula, effectively and efficiently integrating virtual reality-based tasks for practicing presentations and delivering feedback requires the investment of substantial time and financial resources (Merchant et al., 2014). Such considerations should be directly aligned with the strategic policy of higher education institutions.

Chapter 6

Summarizing Conclusions and General Discussion

6.1 Introduction

This final Chapter summarizes and combines the results of the studies described in previous Chapters. Since the results of each study are discussed separately in Chapters 2 to 5, this Chapter goes a step further by discussing the main findings in light of the literature, methodology, future research directions and practical implications. To do so, the first section summarizes the main findings and recaps how the presented studies have answered the underlying research questions as formulated in the introduction. Further, specific attention is given to the limitations of the studies within this research project, the contributions of this research to the scientific discourse on (promoting) oral presentation competence and suggestions for designing related comprehensive learning environments in higher education practice. Taking these contributions and limitations into account, an agenda is constructed for future presentation research.

6.2 Overview of main findings

As addressed in Chapter 2, the systematic literature review study was intended to answer the following question: *What characterizes a comprehensive learning environment for developing oral presentation competence in the context of higher education?* The premise of this dissertation is that the design of the learning environment for developing this competence requires a systematic approach that takes the instruction, learning and assessment side of the learning environment into account (Biggs, 1996). This review was aimed at synthesizing findings from previous studies in the field of presentation research into a set of design principles for developing presentation competence in higher education. By using the 3P model of Biggs (2003) as a frame to analyse the 52 selected publications, the reviewed studies were categorized with respect to student characteristics and learning environment characteristics (presage), learning processes (process) and outcomes (product). Combining these aspects into one overall model facilitated the construction and formulation of the key learning environment characteristics influencing students' oral presentation competence supported by arguments for these relationships. The following design characteristics were deduced from the model: learning objectives, learning task, behaviour modelling, opportunity to practice, intensity and timing of feedback, peer assessment and self-assessment (see Figure 6.1 for the formulations of the design principles).

Seven Design Principles for Developing Oral Presentation Competence

Instruction

1. Ensure that learning objectives are communicated explicitly to students and are specifically formulated in relation to criteria of oral presentations in order to increase self-efficacy beliefs and oral presentation competence.

2. Ensure that the learning task – the presentation assignment – is related to content of the particular discipline considered as relevant by students, the complexity of the task develops through the course and students perceive the context of the task as 'authentic' to enhance self-efficacy beliefs, oral presentation competence and to decrease communication apprehension.

Learning Activities

3. Provide opportunities for students to observe models of peers or experts to increase self-efficacy beliefs and oral presentation competence.

4. Provide opportunities for students to practice their oral presentations in order to develop their oral presentation competence and to decrease their communication apprehension.

Assessment Strategy

5. Ensure that feedback is explicit, contextual, adequately timed and of suitable intensity in order to improve students' oral presentation competence.

6. Encourage the involvement of peers in formative assessment processes in order to develop students' oral presentation competence and attitudes towards presenting.

7. Facilitate self-assessment using videotaping and portfolios to encourage students' self-efficacy beliefs, oral presentation competence and attitudes towards presenting.

Figure 6.1 Seven Design Principles for Developing Oral Presentation Competence in Higher Education

This Chapter responded to the request from the scientific community in presentation research (e.g. De Grez et al., 2009a) to study learning environments from a concrete, but comprehensive perspective to direct theoretical, empirical and practical studies on developing oral presentation competence in the higher education context. Research starting from this comprehensive perspective of (1) aligning key aspects of course design (Biggs, 1996) and (2) encouraging the three crucial components of oral presentation competence (cognition, behaviour and attitude towards presenting), might help to construct and formulate crucial design principles for developing this competence, which could facilitate the conduction of empirical studies aiming to refine these principles.

As a result of this systematic review, (1) this Chapter argues to include all seven principles for designing learning environments for oral presentation competence development (see also section 6.4 about the scientific contribution of this study), (2) the added value of this study is related to both the comprehensive perspective as well as the theoretical and empirical arguments supporting

each principle (see sections 6.4 and 6.6) and (3) this set of principles offers opportunities for an effective and efficient design of the instructional environment (see also section 6.6 about contributions to educational practice). Besides the relevance of several limitations related to (1) the reviewed studies and (2) the methodology of the conducted review study (see section 6.3), two other questions were frequently formulated about this systematic review by scholars as well as practitioners during conferences or by editors and reviewers of journals.

Firstly, it is questioned why the component 'students characteristics' is included within this Chapter, but not used for formulating the design principles for oral presentation competence development (see also Figure 6.1). Regarding the request from the literature to study learning environments for developing oral presentation competence from a comprehensive perspective, it was decided to focus in this systematic review on the relationship between learning environment characteristics and oral presentation competence or components thereof. This position was supported by the fragmented and incomplete picture of the relationships between these variables in previous publications. These presentation studies (1) showed that learning environment characteristics were studied in isolation or simultaneously, (2) reflected contradictory results and (3) adopted several non-experimental methods to support their claims. Furthermore, a focus on learning environments was encouraged by the request to design both effective and efficient courses for developing presentation skills, especially in times when student numbers rise, while instructional time decreases (Chan, 2011). Although the educational design principles were deduced from studies focusing on students in the higher education context, more attention to the component 'student characteristics' is needed to provide more insights into the generalizability of the identified relationships for students from varying domains or levels within higher education or other student characteristics such as gender, age or nationality. The same argument holds for the empirical studies reported in Chapters 3 and 4 in this dissertation, since the studies (on feedback) did not measure students' preferences of feedback, their perceived utility of feedback and their actual use of the feedback messages (see also section 6.3 about the limitations of this research project). More research into student characteristics in this field or presentation research could further nuance the way in which the set of principles deduced within Chapter 2 can be used to account for different characteristics of students in higher education.

Secondly, a question raised is to what extent the educational design principles can be applied to other 21st century skills in higher education, such as problem solving, scientific writing, argumentation or negotiation skills. It could be argued that the set of principles constructed in Chapter 1 might also be applied to develop other academic competencies, which could strengthen the generalizability of this set. However, the specific interpretation and elaboration

of the principles will differ depending on the intended competency and will require future research (see also Chapter 2). Furthermore, domain-specific systematic reviews, which are aimed at developing other academic competencies, may find not only comparable but also additional characteristics of the learning environment. For example, in the field of fostering argumentation skills, Noroozi et al. (2012) selected, after conducting a systemic literature review, 108 publications that also included computer-supported collaborative learning environment characteristics.

As presented in Chapter 3, the aim of the first empirical study of this research project was to answer the following research question: *To what extent does the development of students' oral presentation competence differ depending on commonly used feedback sources in higher education?* The incentive for focusing on feedback, as a major influence on learning and achievement (Hattie & Timperley, 2007), was directly related to the outcomes of the systematic literature review study presented in Chapter 2. Firstly, three of the seven design principles for developing oral presentation competence relate to formative assessment, showing the importance of feedback following formative assessment in this specific research field. Secondly, previous studies were inconclusive regarding the potential impact of the feedback source on fostering students' presentations, since these studies failed to (1) distinguish separate feedback sources in their experiments (Mitchell & Bakewell, 1995) and (2) measure the presentation competence in the phase in which the most progression is expected, that is between the first and second presentation (Calcich & Weilbaker, 1992). To reduce the ambiguity resulting from previous studies, in this study a quasi-experimental design was employed. It examined the effects of feedback sources, such as the teacher, peers, peers guided by tutors and the self, on 144 first-year undergraduate students' progression in cognition, behaviour and attitude towards presenting as three interrelated elements of oral presentation competence. The results of this study revealed an overall progress in these components between a first and second presentation performance, which is comparable to the results reported in Chapters 4 and 5. These findings support the idea of the interrelatedness of cognition, skills and attitude towards presenting as essential components of oral presentation competence (Mulder, 2014; Mulder & Winterton, 2017; Van Ginkel et al., 2015). Further, the results directly relate to the idea of designing learning environments from a comprehensive perspective that foster all three crucial components of oral presentation competence.

The main finding of this study is the superiority of teacher feedback for encouraging students' presentation behaviour, while cognition and attitude towards presenting developed significantly irrespective of the particular feedback source. The essential role of the teacher for delivering verbal feedback is frequently mentioned in the 'expert literature' (Reis & Renzulli, 2010).

Furthermore, teachers fulfil a crucial role in facilitating effective peer feedback processes (Van den Berg, Admiraal, & Pilot, 2006). Future research should focus more on how the effectivity of peer assessment could be increased by analysing feedback provided by teachers that are qualified as 'academic skills teachers' with at least five years' experience in providing oral presentation skills courses at the university level (see also Chapter 3). Furthermore, an experiment, in which students receive blind feedback from teachers, peers or from an innovative technology (for example virtual reality; VR), could reveal whether teachers' authority plays a role in the effectivity of feedback on students' presentation performances.

Another important finding of the study presented in Chapter 3 reveals the limited impact of the self-assessment condition on developing students' oral presentation competence, which remains a critical point for consideration in future research and educational implications. Since a third of the students in the self-assessment condition did not return their reflection forms, it is questionable whether self-regulation skills are an important factor for this cohort of students. The extent to which students could regulate their own learning and are motivated to fulfil self-assessment tasks might differ between: (1) students who want to easily reach the requirements set by the teacher and (2) students who prefer to develop themselves. Therefore, in future research more insights on these self-regulation skills are needed for understanding the limited impact of the self-assessment condition in this study.

Moving, in terms of Biggs (2003), from the 'student perspective' to the 'design of the learning environment' to construct the self-assessment condition, several points should be discussed in more detail. First of all, several studies emphasize the requirement of an external feedback source, next to the self, for developing students' academic skills and also to foster reflection skills and positive attitudes towards reflection (Higgins et al., 2002). Further, critical discussions on the way in which students' reflection is supported by teachers and curriculum designers deserve a careful consideration. In the presentation skills courses within this research project, it remains questionable to what extent students in the self-assessment condition fully benefited from the full reflection cycle (see Chapter 3) as adopted in these presentation courses. Korthagen and Vasalos (2005) argue that the process of reflection requires considerable time for a deeper understanding, awareness of essential aspects or alternative methods of actions and also discussions about these findings in classrooms. It is questionable whether these requirements for high-quality reflection are realistic within the given timeframe of these (short term) presentation courses. Future research should provide more in-depth insights into the underlying processes in providing self-feedback in order to optimize self-assessment in academic skills courses in higher education. This research direction could also be beneficial for integrating virtual reality-based

elements in self-assessment tasks when such innovative technologies could potentially replace the teacher as provider of feedback on presentation delivery aspects (see Chapter 5). In line with this, if students become capable of reading the 'delayed' feedback reports (after training sessions), generated by the computer system, they could interpret these reports without the intervention of the teacher.

Chapter 4 addresses the following research question: *To what extent does the quality of feedback, directly provided after undergraduate students' presentations, differ between commonly used feedback sources (i.e. teacher, peers, peers guided by tutors) in higher education?* Although the study reported in Chapter 3 highlighted the superiority of the teacher as feedback provider, the relationships between the feedback source and oral presentation competence development remained unclarified. Therefore, insights into the quality of the feedback provided by the different sources turned out to be crucial. Research focusing on critically analysing feedback processes of teachers could reveal essential elements for designing effective peer-assessment training. Further, a research focus on feedback could verify whether learning environments for developing this competence can be made more efficient from a curriculum design perspective. For example, to what extent can peers replace the role of teachers in feedback provision? Or, is it possible in the near future to substitute teacher feedback for feedback delivered by innovative technologies, such as virtual reality (VR)?

To provide more insight into the quality of the delivered feedback, this part of the project examined 95 feedback processes conducted directly after undergraduate students' presentations under the following conditions: teacher feedback, peer feedback and peer feedback guided by tutors. After constructing a coding scheme, results demonstrated that teacher feedback corresponds to the highest extent with the majority of the seven identified feedback quality criteria in the literature (e.g., Hattie & Timperley, 2007; Shute, 2008). This shows that the quality of teacher feedback is higher than that of peer feedback. Although the critical role of the teachers is further emphasized and elaborated in the discussions of Chapter 4, differences in feedback quality between (1) peers and (2) peers guided by tutors remain an interesting finding as well. An analysis at the level of the individual quality criteria for feedback showed significant differences on the content-related feedback criteria, whereas the form-related criteria did not significantly vary between (1) peers and (2) peers guided by tutors. This finding suggests that, even though the quality of content-related feedback is higher in the peer feedback guided by tutor condition than the peer feedback condition, its effects in terms of impact on students' presentation skills (as shown in Chapter 3) depends to a large extent on how the feedback is actually provided (i.e., form-related feedback). Follow-up studies should focus more on the fact that form-related criteria

might be conditional for delivering effective content-related feedback messages (see also section 6.4 about the scientific contribution of this study). Finally, while reflecting on the construction of the adopted coding scheme in this study, the provided comprehensive overview of both content-related as well as form-related feedback quality aspects could also be applied to other academic competencies in the higher education context for analysing feedback that is (1) verbally provided and (2) delivered directly after students' performance.

Chapter 5 aimed to answer the following research question: *What is the impact of a virtual reality-based task on developing students' oral presentation competence in higher education?* First of all, the innovative technology of virtual reality was selected regarding the following reasons: 1) the potential for developing students' competencies, since interactive learning environments could imitate real-life processes and facilitate the provision of feedback (Merchant et al., 2014); 2) the potential of this technology for self-practicing presentations in the near future, regarding its portability and, therefore, use at any time and any place without the intervention of a teacher which could reduce teaching staff costs; 3) the current state of the technique of virtual realitiy which is in front in comparison to other innovative technologies (such as 'augmented reality'). This experimental study (N=36) examines the effectiveness of a virtual reality-based task, in which students present in a virtual environment and receive feedback generated by the system that is explained by a teacher, on students' cognition, behaviour and attitude towards presenting. The effects are compared with a control condition of a face-to-face presentation task with expert feedback. Results demonstrated significant improvements of all components of presentation competence (comparable with the results described in Chapter 3), however no differences between the conditions were identified. Again the presence of the teacher as feedback provider seemed important and this could be an essential explanation for the lack of differential impacts on students' presentation competence. This picture is in line with the research presented in Chapters 3 and 4, showing the superiority of the teacher as feedback source and as provider of high quality feedback. Other arguments were found in students' evaluations. Students from both conditions evaluated crucial design principles, as practicing presentations (design principles 4) and the type of feedback (design principle 5), in an acceptable and comparable manner when looking at the quantitative ratings. However, the variation in their explanatory arguments is interesting for future research and thoughts about whether virtual reality can be complementary as a learning environment characteristic in presentation skills courses. While students in the control condition highlighted the feedback because of the positive and constructive manner in which it was formulated and provided, students from the experimental condition emphasized the detailed and analytical characteristics of the received feedback. Additionally, future research should study the quality of the feedback provided in VR-conditions by (1) analysing

the algorithms used to trace the presentation delivery aspects and (2) analysing the feedback provided by teachers based on the information delivered by the computer system. This study explicitly reacts to the earlier mentioned restrictions that were mentioned regarding the studies reported in Chapters 2, 3 and 4 by including the students' perspective. More insights into the perspective of the student, as emphasized in this study, could provide suggestions to further refine a selection of educational design principles as deduced in the review study. This line of reasoning is further elaborated in section 6.3 regarding the limitations of this research project as well as in section 6.5 on constructing an agenda for future research on presentation competence development.

6.3 Limitations

With respect to the limitations of the conducted studies, two groups of limitations can be distinguished. The first group is related to methodological limitations of both the systematic review as well as the empirical studies and the second group refers to developing theory in the field of presentation competence development.

First, besides the bias within the selected publications within the review study (further explained in Chapter 2), several limitations pertain to the adopted methodology for selecting these studies in computerized databases. It is remarkable that 37 studies were added to the yield of relevant publications after applying the snowballing technique. As described in the discussion section of Chapter 2, (1) the limited selection of search terms relating to 'learning environment' and (2) the appearance of relevant articles in journals beyond the selected computerized databases encouraged the application of the snowballing technique. In future systematic reviews on learning environment characteristics fostering students' competencies, it is suggested to apply the snowballing technique in the initial stage of the search strategy to ensure that (1) adequate synonyms for the keywords are selected and (2) potential relevant articles beyond the computerized databases are traced. Also for the second study, a systematic search was conducted, in this case to construct a theoretical framework. Regarding the search strategy, more attention should be given to the selected search terms, since only positively formulated action verbs were adopted that could have resulted in findings addressing mainly positive influences on competence, while ignoring possible studies that revealed no or negative relationships between the selected variables. Another limitation refers to the selection of learning environment characteristics for constructing the educational design principles. Apart from the seven selected design characteristics of learning environments, other characteristics (i.e. 'instruction by theory') exist that might also influence students' performances. However, in selecting learning environment

characteristics for developing design guidelines, a cut off score of 20 percent was used, meaning that these characteristics were found to influence presentation performance in at least 10 of the 52 selected scientific studies. Another methodological limitation refers to the limited impact of the self-assessment condition on developing students' presentation competence. First of all, the lack of an external feedback source (Higgins et al., 2002) in this self-assessment condition could be essential for the limited learning gains from feedback and discussions based on self-reflection. Second, it is questionable to what extent students in this condition fully gained from the reflection cycle (as designed by Korthagen & Vasalos, 2005), since the process of reflection requires considerable time and a deeper understanding for students which does not relate to the short-term presentation skills courses in this experiment within the first year of their studies. A final limitation is related to the intervention of the teacher in the VR-condition within the study presented in Chapter 5. It could be argued that a condition that consists of both VR and a teacher is inefficient. However, the presence of a teacher was essential for both (1) instructing students how to use VR technology for practicing their presentation skills and (2) interpreting the reports produced by the computer system and delivering feedback. Since Chapter 5 reveals that the feedback in the VR condition can be defined as complementary to feedback delivered by a teacher based upon observation – and thus valuable for the student -, follow-up studies should focus on a potential differential impact between feedback delivered by teachers and feedback solely delivered by the VR system, in a situation in which students are familiar with using the VR technology. In line with this, future studies are directed to (1) the potential differential impact of 'immediate feedback' versus 'delayed feedback' within VR environments and (2) VR studies in which students interpret their own feedback reports delivered by the VR computer system. Furthermore, insights based on results derived from such studies could verify to what extent VR technologies optimise self-assessment tasks in the near future.

Second, with respect to theory development in the field of fostering students' presentations in higher education (the second group of limitations), the impact of studies described in Chapters 3 and 4 on the construction of feedback theory might be limited. Although the quality of feedback was emphasized as an essential explanation for the identified superiority of the teacher as feedback provider, there might be other than 'learning environment characteristics', such as 'student characteristics', for explaining the strength of this feedback source. As described in Chapter 3, student characteristics as 'gender' and 'domain' were included as covariates, however, these aspects didn't reveal impacts on the relationship between the feedback source and students' presentation competence development. Since the focus of this thesis is on the relationship between learning environment characterises and student' oral presentation competence (see Chapter 2), the student perspective was not included in these empirical studies. Including

aspects of 'student characteristics' relating to feedback and self-regulation in follow-up studies could provide more value to theory development, since both components 'learning environment characteristics' as well as 'student characteristics' constitute learning processes that influence learning outcomes (Biggs, 2003). Following that line, these factors deserve more attention in future research: students' perceived utility of feedback, their actual use of feedback, differences between students in self-regulation skills to provide or receive feedback and differences in students' feedback preferences. In this light, the extent to which students appreciate feedback and actively use it also depends on factors like the authority of the feedback provider and trust between peer students. Future studies within presentation research should build on the insights about the component 'student characteristics' (in terms of Biggs, 2003) in relation to feedback in other fields of study (e.g. Jonsson, 2012; Pintrich & Zusho, 2002). Finally, with regard to the study presented in Chapter 5, a relevant limitation concerns students' unfamiliarity with adopting virtual reality for learning purposes (Hew & Cheung, 2010). This aspect could have influenced the results of the study, both in terms of impacts on developing oral presentation competence as well as perceptions towards using the innovative technology. The potential of VR is probably not optimally used because of this unfamiliarity. More attention in research and practice should be given to train participants prior to the experience of a virtual reality-based task for developing presentation or other academic competencies.

6.4 Scientific contribution

First of all, this thesis constructs and formulates a set of design principles for an effective as well as an efficient design of the instructional environment fostering oral presentation competence in higher education (see Chapter 2). The added value of this set lies in both the comprehensive perspective and in supporting each design principle with underlying theoretical and empirical argumentations supporting these principles developing presentation competence in particular. These argumentations facilitate specific elaborations and interpretations of the formulated principles in the context of this competence. It is concluded in Chapter 2 that all principles should be incorporated in learning environments for developing oral presentation competence considering the ideas of Biggs (1996) regarding constructive alignment. However, it remains questionable to what extent all these seven principles are comparably effective. Therefore, future research (see section 6.5) should focus on whether a learning environment that is more characterized by the comprehensive set of principles leads to more development in students' oral presentation competence. Based on the results of Chapter 3, it should be noted that less strong empirical evidence exists for the effectivity of the seventh principle regarding self-assessment in comparison to the other principles. Effect studies on this principle report contradictory results

(De Grez, 2009). Furthermore, previously published studies failed to adopt (quasi-)experimental studies to support their claims regarding positive impacts of self-assessment on developing students' public speaking competencies (e.g. Bayless, 2004; Grace & Gilsdorf, 2004). Therefore, more research is required to the underlying processes in providing self-feedback and under which conditions this principle of self-assessment could be optimised. In line with, special focus should direct to: (1) the essence of an external feedback source (f.e. teachers or peers), (2) the way in which self-refection is stimulated (f.e. by other reflection cycles than the one of Korthagen) and (3) potential differences in levels of reflection skills regarding varying cohorts (f.e. undergraduate versus master students).

Secondly, this thesis focuses on the relationship between learning environment characteristics and students' oral presentation competence, since the initial goal was to construct a comprehensive set of principles that: (1) address the instruction, learning and assessment sides of the learning environment, (2) directly relate learning environment characteristics to oral presentation competence or components thereof and (3) provide conceptual and empirical arguments for effective operationalization of these learning environment characteristics. Since previous research revealed a fragmented picture of effective learning characteristics that foster oral presentation competence, the aim was first, regarding this initial phase in presentation research, to construct a set of well-argued design principles for developing oral presentation competence. As a consequence, the component 'student characteristics', in terms of Biggs (2003), is not included in the empirical studies aiming to refine this set of seven principles. Only covariates, as gender and domain, were incorporated in Chapter 3, but didn't show effects on the relationship between the feedback source and students' presentation competence development. As earlier suggested, adopting several aspects of 'student characteristics' relating to feedback and self-regulation in future studies could generate more value to developing theory, since both components 'learning environment characteristics' and 'student characteristics' constitute learning processes influencing learning outcomes relating to oral presentation competence.

Thirdly, the premise of this dissertation is that the design of the learning environment for developing oral presentation competence requires a systematic approach that takes the instruction, learning and assessment side of the learning environment into account (Biggs, 1996). The empirical results in this dissertation support this premise, since the results of Chapter 3 and Chapter 5 revealed that all three components of students' oral presentation competence developed significantly in learning environments based on the set of seven essential principles fostering this competence. Therefore, the three crucial components of oral presentation competence, that is cognition, behaviour and attitude towards presenting, seem strongly interrelated. An explanation for this

interrelatedness refers to the idea that students who learn more about presenting (cognition), show a better presentation performance (behaviour), that encourage a growth in motivation to present and perceived relevance of presenting (attitude). However, certain components of presentation competence are more sensible for a particular learning environment characteristic than the other components. For example, Chapter 3 demonstrated that presentation behaviour, in comparison to cognition and attitude towards presenting, was dependent on the feedback source (the teacher). This might be caused by the fact that the provided feedback, irrespective of feedback conditions, was guided by a rubric specifically designed to serve as a feedback instrument for developing oral presentation skills, whereas cognition and attitude towards presenting were more implicitly incorporated in the rubric instrument. Regarding the empirical findings of this thesis, it could be argued that feedback and, for example, learning objectives, as learning environment characteristics, should explicitly be directed to foster the three components of oral presentation competence in order to ensure that the student develops in all three elements. Future research should focus on this assumption.

Fourthly, the comprehensive set of design principles for developing oral presentation competence could potentially also be applied to other academic competencies, which could strengthen the generalizability of the set. This assumption is supported by the fact that learning environment characteristics reveal similarities between varying academic and communication competencies, such as presentation competence (see Chapter 2) and argumentation competence (Noroozi et al., 2012). However, the specific interpretation and elaboration of the principles will differ depending on the intended competency and will require future research. As earlier stated, domain-specific systematic reviews, which are aimed at developing a certain academic and communication competency, may deduce not only comparable, but also additional characteristics of the learning environment. For example, in the field of argumentation skills, Noroozi et al. (2012) selected, after conducting a systematic literature review, 108 publications that also included computer-supported collaborative learning environment characteristics.

Finally, the constructed comprehensive set of design principles offers directions for future studies focusing on developing oral presentation competence in higher education (De Grez et al., 2009a). The empirical studies, described in Chapters 3, 4 and 5, further refined the set of principles corresponding to the assessment strategy of learning environments fostering this competence (i.e, principles 5, 6 and 7, see Chapter 2), by (1) adapting existing principles and/or their supported argumentations and (2) formulating future research directed to potentially formulating new additional principles supported by conceptual and/or empirical argumentations.

First, design principle 4, regarding the opportunity to practice presentations (see Chapter 2), can be further supported from an empirical perspective. Both in studies 2 and 4, the development of students' presentation performances in realistic presentation skills courses significantly increased, which is in line with the suggestion of Calcich and Weilbaker (1992) that the essential progress in students' performance may be expected between the first and second presentation. However, in order to support the empirical arguments for this principle, further research is needed on how students' oral presentation competence development behaves in follow-up phases, thus after the second presentation performance. Also the supporting empirical arguments of principles 5, about the type of feedback, should be further analysed. Besides, aspects such as the timing of feedback, both content-related and form-related feedback criteria should be incorporated in the argumentations in order to ensure high quality feedback for developing oral presentation competence (see also Chapter 4). Finally, the empirical argumentations of design principle 7, about self-assessment for developing this competence, should be adapted, since this feedback source appeared to have a limited impact on students' presentation performance (see Chapter 3). It should be highlighted that the presence of an external feedback source in discussing developing presentation skills, reflection skills and attitudes towards reflection might be conditional for effective self-assessment. Moreover, critical attention should be given to the intended reflection processes, since the reflection cycle of Korthagen and Vasalos (2005) might not adequately relate to (1) unexperienced, first-year undergraduate students with respect to their level of reflection skills (Lew & Schmidt, 2011) and (2) short-term presentation courses with few possibilities for reflection on students' own behaviour and finding alternative methods of actions.

Second, based on the conducted three empirical studies, suggestions arise for further research that could elaborate on potentially formulating additional design principles. Since teacher feedback outperformed other feedback sources (such as peers, peers guided by tutors and the self), it is suggested to highlight the essence of the teachers regarding (1) their impacts on developing students' presentation competence (see Chapter 3) as well as (2) their ability to deliver high quality content- and form-related feedback (see Chapter 4). However, as earlier addressed, more research is needed on the role of the component 'student characteristics' (see 3P model of Biggs) in order to acquire knowledge about teachers' potential influence on students' uptake of feedback, because of their authority as a result of their expertise and experience. This line of research could provide more insights to what extent the quality of feedback played an important role for developing students' presentation behaviour as described in study 2 (see Chapter 3). Finally, a principle could, potentially, be formulated and constructed about the value of innovative technologies, such as virtual reality, to encourage students' presentation competence. Especially, the possibility to deliver additional and (by students perceived as) valuable, detailed

and immediate feedback could further foster students' competencies. However, more research on potential differential impacts of 'immediate feedback' versus 'delayed feedback', facilitated by virtual reality-based tasks, is needed for providing insights to potentially replace the role of the teacher by this form of technology for delivering feedback on presentation delivery aspects (see Chapter 5). This line of future research should integrate the student perspective, since previous studies revealed that students reflect varying levels of presentation performance depending on their feedback sensitivity (e.g. King et al., 2000). As such, it could be questioned whether highly feedback sensitive students, who receive 'immediate feedback' instead of 'delayed feedback' during their performance, reveal less positive experiences regarding their update of feedback (because this type of immediate feedback could distract attention from their actual presentation) which negatively impacts their development in oral presentation performance.

6.5 Future research agenda

The following section describes six directions for future research and sets a research agenda for developing oral presentation competence in higher education. The directions are built on the gaps concerning the foci of recent studies (also conducted within this research project), inconsistencies in empirical and conceptual findings and the quality of empirical evidence. A first direction of future research concerns the impact of the combined set of principles presented in this research project (see Chapter 2). The systematic review makes a plea for a comprehensive perspective on designing learning environments for fostering oral presentation competence, but little is known about whether a learning environment that is more characterized by the comprehensive set of principles leads to more development of students' presentation performances. In the empirical studies of this project, the studied learning environment fulfilled all seven design principles, but was not compared to environments that do not align with all these principles. Interesting questions are (1) to what extent current oral presentation courses are designed based on a comprehensive picture of effective learning environment characteristics and (2) whether a comprehensive perspective on the design of learning environments leads to more effective learning of oral presentation competence. With regard to the first question, future research could focus on eliciting presentation skills teachers' responses towards the comprehensive set of design principles for developing students' oral presentation competence. Such research could provide a picture of the perceived usefulness of the set of design principles and the interdependence of these principles in educational practice. Conducting triangulation of methods, by using in-depth interviews, focus group discussion sessions and large-scale surveys, within several higher education institutions are required for answering this research question. Subsequently, measuring students' presentation performances in learning environments for

developing oral presentation competence, more or less characterized by the comprehensive set of design principles, is essential as a next focus of research in this field.

A second direction is related to further validating the earlier adopted rubric 'oral presentation skills' (see Chapter 3). As part of this second study of the project, the rubric was validated based on (1) previous publications adopting rubric assessment instruments for measuring oral presentation behaviour and (2) eliciting the perceptions of academic skills experts related to the usefulness of the instrument and adopted characteristics (i.e. criteria, levels and scales). However, other perspectives, such as teachers, alumni and students, relevant to the higher education context should be included via triangulation when testing the content validity of the assessment instrument. First, teachers, with at least five years' experience in providing academic skills courses, should be selected, because of their specific expertise in both developing skills education as well as adopting assessment instruments in feedback processes. Second, students and tutors, defined as second- or third-year students, should test the validity of the rubric, because they fulfil essential roles in providing and receiving feedback in peer feedback processes within various higher education curricula. Third, alumni, defined as former students with at least a year experience in professional practice, should be included in validation sessions, since they can reflect on which specific presentation criteria are relevant in varying domains within the working environment. These insights should encourage researchers to critically reflect on which specific presentation criteria (and their related levels and scoring scales) are becoming more relevant, since working environments are constantly changing. For solving contemporary complex problems, other communication competencies, such as argumentation and negotiation competencies are increasingly required for the future higher educated professional. In line with this, besides the ability to send a message from a sender to a receiver, especially 'interactions with audiences' will gain priority as part of the ability to present and convince other professionals about ideas, concepts or research. Further, innovative technologies, such as virtual reality and augmented reality, are able to identify essential intermediate variables for developing oral presentation competence, such as 'nervousness' by measuring heart rates. Therefore, testing the validity of the rubric, while using video footage with the rubric and triangulating different groups (i.e. teachers, students/tutors and alumni) in focus group discussions within the higher education context, should be a core direction for future research in this specific field of research.

A third direction for future research can be aimed at the learning setting (or context) of the learning environment. Oral presentation competence development is studied both in the context of regular speaking courses and in domain-specific settings. In regular speaking courses, this competence is studied as an individual, isolated activity independent from domain-specific

content (e.g. Dupagne et al., 2007; King et al., 2000). On the other hand, oral presentation competence can also be developed as an side effect of learning in a domain-specific authentic learning environment in which students learn through working on a professional authentic task (e.g. Econopouly et al., 2010; Kolber, 2011). This also relates to design principle two of creating an authentic learning task. Both from scientific and educational practice perspectives, it remains unanswered whether oral presentation courses are most effective for encouraging students' development (Mitchell & Bakewell, 1995). Therefore, future studies should focus on comparing the development of students' oral presentation performances between (1) regular speaking courses and (2) learning environments consisting of authentic tasks that are strongly connected to the professional content of the specific domain, and in which oral presentation performance is incorporated as an important competence of the young professional.

A fourth direction of future research is already highlighted within this Chapter and specifically related to the last empirical study on the impact of virtual reality-based tasks fostering students' presentation competence within this project. As earlier addressed, the possibility of virtual reality to deliver additional and (by students perceived as) valuable feedback could further encourage students' competencies. However, more research on potential differential impacts of 'immediate' feedback versus 'delayed' feedback, facilitated by virtual reality-based tasks, is needed for providing insights to potentially replace the role of the teacher by this form of technology for delivering feedback on presentation delivery aspects (see also Chapter 5 and this Chapter). Furthermore, research should focus on potential differences in impact on students' oral presentation competence development between (1) VR-conditions supported by teachers and (2) VR-conditions without the support of teachers.

A fifth direction for future research concerns the extent to which the comprehensive set of principles could also be applied to develop other types of students' presentations. In this dissertation students presented individually on a domain-related topic connected to their study programs. However, it remains unclear whether this set of principles can be used as strategy for developing learning environments focusing on (1) co-presentations (instead of individual ones), (2) online presentations (webinars), (3) varying presentation contexts (i.e. presentations in meetings, project groups, instructional situations or conference sessions). The added value of such a research direction is to what extent this set of principles is generalizable to other types and contexts of presentations relevant for higher education professionals.

A final future research direction is related to the underexposed role of the component 'students characteristics' (in terms of Biggs, 2003) regarding aspects as domain-specific prior knowledge,

personality traits (introvert/extravert) and students' uptake of feedback while developing presentation competencies. A future study is needed to acquire knowledge about teachers' potential influence on students' uptake of feedback, because of their authority as a result of their expertise and experience. If more insights are acquired about if and how teachers' authority might affect students' uptake of feedback depending on their characteristics, than curriculum designers could use these findings for developing future learning environments in which effective peer feedback is integrated. These directions of future research are recommended for researchers to further investigate the relationships between the instructional environment and oral presentation competence development in the context of higher education, while building on the conducted studies described in this thesis, and serving communities of scholars, policy makers, curriculum designers, teachers, and students acting in communities on the interplay of research and practice in this specific field of presentation research.

6.6 Contribution to educational practice

Fostering oral presentation competence is an essential objective in higher education as perceived by many scholars, teachers and curriculum designers from differing institutions around the globe (Van Ginkel et al., 2015). The outcomes of this research project contribute in several ways to these actors active in this field.

First of all, the comprehensive set of design principles (Chapter 2) can serve as a heuristic to design effective as well as efficient instructional environments for oral presentation competence development. For example, the second principle stresses the integration of presentation tasks in domain-specific courses. Another example concerns the sixth design principle that provides insights for the involvement of peers in formative assessment processes encouraging an efficient approach on the design of learning environments for developing this competence. Especially, if peers are trained before entering formative assessment processes they could support the teacher and reduce instructional time. Second, all principles should be included (see Chapter 2) for realizing effective learning environments fostering oral presentation competence. This position is in line with the conclusion of other researchers (Wesselink et al., 2007) in the field of competence-based education for encouraging competencies in practice (p. 36). Third, the set of principles generated in Chapter 2 could also be applied to foster other academic competencies. However, the specific elaboration and interpretation of the principles might differ depending on the intended competence or skill and will require future studies.

Further, carefully designing formative assessment processes in academic skills courses leave challenges for curriculum designers, since feedback provided by teachers turned out to be crucial. Especially in times when student numbers rise, while instructional time and possibilities for teacher-student interactions diminish, it is important to prepare peers before entering formative assessment processes in higher education to ensure high quality of feedback. In line with the ideas of Murphy and Barry (2016), the instruction of these peers should include attention to (1) quality criteria of feedback and (2) group work dynamics when providing feedback on peer presentations. This research project (especially regarding Chapter 4) contributes to this by stressing the essence of paying attention to all seven quality criteria of feedback derived from the feedback literature. Teachers who include more of these criteria in their feedback have more impact on student' presentation performance. In order to guarantee the quality of feedback by peers, academic skills trainers should pay considerable attention to both content-related and form-related characteristics.

Finally, since the effects of both the virtual reality and control condition (see Chapter 5) on oral presentation competence development are comparable, a potential barrier – for adopting virtual reality in education – is removed for curriculum designers. Despite the fact that students were not yet familiar with the VR technology, the impact of the VR condition turned out to be comparable with the control condition of 'regular feedback'. This finding supports the promise that VR might have positive impacts on students' oral presentation competence in the near future when VR becomes 'normal practice' and students become more familiar with the technology. The use of virtual reality in higher education could generate financial savings if it could partly substitute the role of the teacher. However, as earlier mentioned, the teacher still plays an important role as a feedback provider. Therefore, more research is needed, especially since virtual reality-based tasks also have the opportunities to deliver 'immediate' feedback generated by the computer system and could therefore, potentially, replace the teacher in delivering feedback on, at least, presentation delivery aspects. Previous studies (e.g. King et al., 2000) revealed that immediate feedback could be effective for developing students' presentation delivery aspects (such as eye contact, use of voice, posture and gestures). However, delayed feedback is considered as crucial for developing the content and structure of a presentation, since these aspects require conscious deliberation. Nevertheless, for all considerations of applying the results of this research project on VR to the educational practice, several implications remain: (1) improve the interaction with the virtual audience and tension of presenting from a technological perspective, (2) integrate virtual reality-based tasks next to face-to-face processes to ensure the delivery of complementary feedback (Sitzmann, 2011; see Chapter 5) and (3) ensure that investments of substantial time and financial resources for integrating virtual reality in higher education are aligned with the strategic policy of the particular higher education institution (Merchant et al., 2014).

References

Adams, K. (2004). Modelling success: Enhancing international postgraduate research students' self-efficacy for research seminar presentations. *Higher Education Research and Development*, *23*(2), 115-130.

Alshare, K., & Hindi, N. M. (2004). The importance of presentation skills in the classroom: students and instructors perspectives. *Journal of Computing Sciences in Colleges*, *19*(4), 6-15.

Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology*, *84*(3), 261-271.

Andolsek, D. L. (1995). Virtual reality in education and training. *International Journal of Instructional Media*, *22*(2), 145–155.

Asghar, A. (2010). Reciprocal peer coaching and its use as a formative assessment strategy for first-year students. *Assessment & Evaluation in Higher Education*, *35*(4), 403-417.

Attali, Y., & van der Kleij, F. (2017). Effects of feedback elaboration and feedback timing during computer-based practice in mathematics problem solving. *Computers & Education*, *110*, 154-169.

Baker, W. H., & Thompson, M. P. (2004). Teaching presentation skills. *Business Communication Quarterly*, *67*(2), 216-219.

Bandura, A. (1986). *Social foundations of thought and action. A social cognitive theory*. Prentice-Hall Englewood Cliffs, NJ.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.

Bayless, M. L. (2004). Change the placement, the pace, and the preparation for the oral presentation. *Business Communication Quarterly*, *67*(2), 222-225.

Biggs, J. B. (1996). Enhancing teaching through constructive alignment. *Higher Education*, *32*(3), 347-364.

Biggs, J. B. (2003). *Teaching for quality learning at university: What the student does* (2nd ed.). Buckingham: Open University Press.

Black, P., & Wiliam, D. (1998). Assessment and classroom learning. Assessment in Education: *Principles, Policy & Practice*, *5*(1), 7-74.

Black, P., & Wiliam, D. (2009). Developing the theory of formative assessment. *Educational Assessment, Evaluation and Accountability*, *21*(1), 5-31.

Boud, D., & Molloy, E. (2013). Rethinking models of feedback for learning: the challenge of design. *Assessment & Evaluation in Higher Education*, *38*(6), 698-712.

Bourhis, J., & Allen, M. (1998). The role of videotaped feedback in the instruction of public speaking: A quantitative synthesis of published empirical research. *Communication Research Reports*, *15*(3), 256-261.

Bourke, R. (2014). Self-assessment in professional programmes within tertiary institutions. *Teaching in Higher Education, 19*(8), 908-918.

Bower, M., Cavanagh, M., Moloney, R., & Dao, M. (2011). Developing communication competence using an online Video Reflection system: pre-service teachers' experiences. *Asia-Pacific Journal of Teacher Education, 39*(4), 311-326.

Bransford, J. D., Brown, A. L., & Cocking, R. R. (1999). *How people learn: Brain, mind, experience and school.* Washington, DC: National Academies Press.

Brown, T., & Morrissey, L. (2004). The effectiveness of verbal self-guidance as a transfer of training intervention: its impact on presentation performance, self-efficacy and anxiety. *Innovations in Education and Teaching International, 41*(3), 255-271.

Calcich, S., & Weilbaker, D. (1992). Selecting the optimum number of in-class sales presentations. *Marketing Education Review, 2*(1), 31-33.

Campbell, K. S., Mothersbaugh, D. L., Brammer, C., & Taylor, T. (2001). Peer versus self-assessment of oral business presentation performance. *Business Communication Quarterly, 64*(3), 23-42.

Carlson, R. E., & Smith-Howell, D. (1995). Classroom public speaking assessment: Reliability and validity of selected evaluation instruments. *Communication Education, 44*(2), 87-97.

Carroll, C. (2006). Enhancing reflective learning through role-plays: The use of an effective sales presentation evaluation form in student role-plays. *Marketing Education Review, 16*(1), 9-13.

Chan, V. (2011). Teaching oral communication in undergraduate science: Are we doing enough and doing it right? *Journal Of Learning Design, 4*(3), 71-79.

Chen, C, Toh, S., & Ismail, W. (2005). Are learning styles relevant to virtual reality? *Journal of Research on Technology in Education, 38*(2), 120–128.

Cheng, W., & Warren, M. (2005). Peer assessment of language proficiency. *Language Testing, 22*(1), 93-121.

Clark, R., & Jones, D. (2001). A comparison of traditional and online formats in a public speaking course. *Communication Education, 50*(2), 109-124.

Clarke, P., Schull, D., Coleman, G., Pitt, R., & Manathunga, C. (2013). Enhancing professional writing skills of veterinary technology students: linking assessment and clinical practice in a communications course. *Assessment & Evaluation in Higher Education, 38*(3), 273-287.

Coller, B. D., & Scott, M. J. (2009) Effectiveness of using a video game to teach a course in mechanical engineering. *Computers & Education, 53*(3), 900-912.

Coller, B. D., & Shernoff, D. J. (2009). Video game-based education in mechanical engineering: a look at student engagement. *International of Engineering Education, 25*, 308–317.

Cooper, D. (2005). *Assessing what we have taught: The challenges faced with the assessment of oral presentation skills*. Paper presented at the Higher education in a changing world: 2005 annual International Conference of the Higher Education Research and Development Society of Australasia, July 3–6, at the University of Sydney, Sydney, Australia.

De Grez, L. (2009). *Optimizing the instructional environment to learn presentation skills*. Dissertation: Universiteit Gent.

De Grez, L. Valcke, M., & Roozen, I. (2009a). The impact of Goal Orientation, Self-Reflection and Personal Characteristics on the Acquisition of Oral Presentation Skills. *European Journal of Psychology of Education, 24*(3), 293-306.

De Grez, L., Valcke, M., & Roozen, I. (2009b). The impact of an innovative instructional intervention on the acquisition of oral presentation skills in higher education. *Computers and Education, 53*(1), 112-120.

De Grez, L., Valcke, M., & Berings, D. (2010a). Student response system and learning oral presentation skills. *Procedia Social and Behavioral Sciences, 2*(2), 1786-1789.

De Grez, L., Valcke, M., & Berings, D. (2010b). Peer assessment of oral presentation skills. *Procedia Social and Behavioral Sciences, 2*(2), 1776-1780.

De Grez, L., Valcke, M., & Roozen, I. (2012). How effective are self-and peer assessment of oral presentation skills compared to teachers' assessments? *Active Learning in Higher Education, 13*(2), 129-142.

De Jong, T. (1991). Learning and instruction with computer simulations. *Education & Computing, 6*, 217–229.

De Kleijn, R., Meijer, P. C., Brekelmans, M., & Pilot, A. (2012). Curricular Goals and Personal Goals in Master's Thesis Projects: Dutch Student-Supervisor Dyads. *International Journal of Higher Education, 2*(1), 1-11.

Dochy, F. J. R. C., Segers, M., & Sluijsmans, D. (1999). The use of self-, peer and co-assessment in higher education: A review. *Studies in Higher Education, 24*(3), 331-350.

Dubovi, I., Levy, S. T., & Dagan, E. (2017). Now I know how! The learning process of medication administration among nursing students with non-immersive desktop virtual reality simulation. *Computers & Education*.

Dupagne, M., Stacks, D. W., & Giroux, V. M. (2007). Effects of video streaming technology on public speaking students' communication apprehension and competence. *Journal of Educational Technology Systems, 35*(4), 479-490.

Dunbar, N., Brooks, C., & Kubicka-Miller, T. (2006). Oral communication skills in higher education: Using a performance-based evaluation rubric to assess communication skills. *Innovative Higher Education, 31*(2), 115-127.

Econopouly, B.F., Byrne, P. F., & Johnson, M.A. (2010). Incorporating case studies into a world food and population course. *Journal of Natural Resources and Life Sciences Education, 39*, 79-83.

Espasa, A., & Meneses, J. (2010). Analysing feedback processes in an online teaching and learning environment: an exploratory study. *Higher Education, 59*(3), 277-292.

Falchikov, N. (2005). *Improving Assessment Through Student Involvement: Practical Solutions for Aiding. Learning in Higher and Further Education*. New York: RoutledgeFalmer.

Fallows, S., & Steven, C. (2000). Building employability skills into the higher education curriculum: a university-wide initiative. *Education + training, 42*(2), 75-83.

Ferguson, P. (2011). Student perceptions of quality feedback in teacher education. *Assessment & Evaluation in Higher Education, 36*(1), 51-62.

Fink, A. (2010). *Conducting research literature reviews: From the Internet to paper* (3rd ed.). Los Angeles, CA: Sage publications.

Galas, C., & Ketelhut, D. J. (2006). River City, the MUVE. *Learning and Leading with Technology, 33*(7), 31–32.

Goodman, J., Wood, R. E., & Hendrickx, M. (2004). Feedback specificity, exploration, and learning. *Journal of Applied Psychology, 89*, 248-262.

Govaerts, M. J., Van de Wiel, M., & Van der Vleuten, C. (2013). Quality of feedback following performance assessments: does assessor expertise matter? *European Journal of Training and Development, 37*(1), 105-125.

Grace, D. M., & Gilsdorf, J. W. (2004). Classroom strategies for improving students' oral communication skills. *Journal of Accounting Education, 22*(2), 165-172.

Green, E. H., Hershman, W., DeCherrie, L., Greenwald, J., Torres-Finnerty, N., & Wahi-Gururaj, S. (2005). Developing and implementing universal guidelines for oral patient presentation skills. *Teaching and Learning in Medicine, 17*(3), 263-7.

Gulikers, J., Bastiaens, Th. & Kirschner, P. (2004). A five-dimensional framework for authentic assessment. *Educational Technology Research and Development, 52*(3), 67-85.

Haber, R. J., & Lingard, L. A. (2001). Learning oral presentation skills, a rhetorical analysis with pedagogical and professional implications. *Journal of General Internal Medicine 16*(5), 308-314.

Harran, M. (2011). What higher education students do with teacher feedback: Feedback-practice implications. *Southern African Linguistics and Applied Language Studies, 29*(4), 419-434.

Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research, 77*(1), 81-112.

Hattie, J. (2009). *The Power of Feedback*. Auckland: Faculty of Education/University of Auckland.

Hawkins, D. G. (1995). Virtual reality and passive simulators: the future of fun. In F. Biocca & M. R. Levy (Ed.), *Communication in the age of virtual reality* (pp. 159–189). Hillsdale, NJ: Lawrence Erlbaum.

Hay, I. (1994). Justifying and applying oral presentations in geographical education. *Journal of Geography in Higher Education, 18*(1), 43-55.

Hayes, N. (2000). *Doing psychological research*. Buckingham: Open University Press.

Hernández, R. (2012). Does continuous assessment in higher education support student learning? *Higher Education, 64*(4), 489-502.

Hew, K. F., & Cheung, W. S. (2010). Use of three-dimensional (3-D) immersive virtual worlds in K-12 and higher education settings: A review of the research. *British journal of educational technology, 41*(1), 33-55.

Higgins, R., Hartley, P., & Skelton, A. (2002). The conscientious consumer: reconsidering the role of assessment feedback in student learning. *Studies in Higher Education, 27*(1), 53-64.

Hill, M., & Storey, A. (2003). SpeakEasy: Online Support for Oral Presentation Skills. *English Language Teaching Journal, 57*(4), 370-376.

Hinton, J. S., & Kramer, M. W. (1998). The impact of self-directed videotape feedback on students' self-reported levels of communication competence and apprehension. *Communication Education, 47*(2), 151-161.

Hodgson, P., & Wong, D. (2011). Developing professional skills in journalism through blogs. *Assessment & Evaluation in Higher Education, 36*(2), 197-211.

Houde, A. (2000). Student symposia on primary research articles: A window into the world of scientific research. *Journal of College Science Teaching, 30*(3), 184-187.

Hughes, I. E., & Large, B. J. (1993). Staff and Peer-group Assessment of Oral Communication Skills. *Studies in Higher Education, 18*(3), 379-385.

Hung, S. T. A. (2016). Enhancing feedback provision through multimodal video technology. *Computers & Education, 98*, 90-101.

Jang, S., Vitale, J. M., Jyung, R. W., & Black, J. B. (2017). Direct manipulation is better than passive viewing for learning anatomy in a three-dimensional virtual reality environment. *Computers & Education, 106*, 150-165.

Jensen, K. K., & Harris, V. (1999). The public speaking portfolio. *Communication Education, 48*(3), 211-227.

Joint Quality Initiative. (2004). *Shared 'Dublin' descriptors for short cycle, first cycle, second cycle and third cycle awards*. Retrieved on: www.jointquality.nl/content/CompletesetDublinDescriptors.doc.

Jonsson, A. (2012). Facilitating productive use of feedback in higher education. *Active Learning in Higher Education, 14*(1), 63-76.

Jonsson, A., & Svingby, G. (2007). The use of scoring rubrics: Reliability, validity and educational consequences. *Educational Research Review, 2*, 130-144.

Juran, J. M., Gryna, F. M., & Bingham, R. S. (1974). *Quality Control Handbook*. New York: McGraw-Hill.

Kaye, M. (1994). Assessing the interpersonal communication competence of vocational teachers: Contemporary issues and dilemmas. *Asia-Pacific Journal of Teacher Education, 22*(1), 69-80.

Kelly, D., Baxter, J. S., & Anderson, A. (2010). Engaging first-year students through online collaborative assessments. *Journal of Computer Assisted Learning, 26*(6), 535-548.

Kerby, D., & Romine, J. (2009). Develop oral presentation skills through accounting curriculum design and course-embedded assessment. *Journal of Education for Business, 85*(3), 172- 179.

Kim, A. K. (2013). Reflective journal assessment: The application of good feedback practice to facilitating self-directed learning. *Journal of Hospitality, Leisure, Sport & Tourism Education, 13*, 255-259.

Kim, S., Kogan, J. R., Bellini, L., & Shea, J. (2005). A Randomized-Controlled Study of Encounter Cards to Improve Oral Case Presentation Skills of Medical Students. *Journal of General Internal Medicine, 20*(8), 743-747.

King, P., Young, M., & Behnke, R. (2000). Public speaking performance improvement as a function of information processing in immediate and delayed feedback interventions. *Communication Education, 49*(4), 365-374.

Kingston, N., & Nash, B. (2011). Formative assessment: A meta-analysis and a call for research. *Educational Measurement: Issues and Practice, 30*(4), 28-37.

Kluger, A. N., & DeNisi, A. (1996). The effects of feedback interventions on performance: a historical review, a meta-analysis, and a preliminary feedback intervention theory. *Psychological bulletin, 119*(2), 254.

Kolber, B. (2011). Extended problem-based learning improves scientific communication in senior-biology students. *Journal of College Science Teaching, 41*(1), 32-39.

Korthagen, F., & Vasalos, A. (2005). Levels in reflection: Core reflection as a means to enhance professional growth. *Teachers and Teaching, 11*(1), 47-71.

Krause, U. M., Stark, R., & Mandl, H. (2009). The effects of cooperative learning and feedback on e-learning in statistics. *Learning and Instruction, 19*(2), 158-170.

Lane, C. (2007). The power of "e": Using e-portfolios to build online presentation skills. *Innovate: Journal of Online Education, 3*(3), 15-19.

Lea, M., & Street, B.V. (1998). Student Writing and Staff Feedback in Higher Education: An Academic Literacies Approach. *Studies in Higher Education, 23*(2), 157-172.

Lee, J. (1999). Effectiveness of Computer-Based Instructional Simulation: A Meta-Analysis. *International Journal of Instructional Media, 26*(1), 71-85.

Lee, E. A. L., & Wong, K. W. (2014). Learning with desktop virtual reality: Low spatial ability learners are more positively affected. *Computers & Education*, *79*, 49-58.

Leeds, E. M., & Mauer, R. A. (2009). Using digital video technology to reduce communication apprehension in business education. *Transactions on Education*, *9*(2), 84-92.

Levasseur, D. G., Dean, K.W., & Pfaff, J. (2004). Speech pedagogy beyond the basics: a study of instructional methods in the advanced public speaking course. *Communication Education*, *53*(3), 234-252.

Lew, M.D., & Schmidt, H.G. (2011). Self-reflection and academic performance: Is there a relationship? *Advances in Health Sciences Education*, *16*(4), 529–545.

Longfellow, E., May, S., Burke, L., & Marks-Maran, D. (2008). 'They had a way of helping that actually helped': a case study of a peer-assisted learning scheme. *Teaching in Higher Education*, *13*(1), 93-105.

Lorenzo, G., Lledó, A., Pomares, J., & Roig, R. (2016). Design and application of an immersive virtual reality system to enhance emotional skills for children with autism spectrum disorders. *Computers & Education*, *98*, 192-205.

Lowe, H., & Cook, A. (2003). 'Mind the Gap: are students prepared for higher education?'. *Journal of Further and Higher Education*, *27*(1), 53-76.

Mason, B. J., & Bruning, R. (2001). *Providing feedback in computer-based instruction: What the research tells us.* Retrieved on: http://dwb.unl.edu/Edit/MB/MasonBruning.html.

Mayer, R. E., & Moreno, R. (2002). Aids to computer-based multimedia learning. *Learning and Instruction*, *12*(1), 107-119.

McCroskey, J. C. (1970). Measures of communication bound anxiety. *Speech Monographs*, *37*(4), 269–277.

McGarr, O., & Clifford, A. M. (2013). 'Just enough to make you take it seriously': exploring students' attitudes towards peer assessment. *Higher Education*, *65*(6), 677-693.

McNamara, D.S., Jackson, G. T., & Graesser, A. (2009). Intelligent tutoring and games (ITAG). *AIED*, *14*, 44-65.

Meijer, M. R., Bulte, A. M. W. & Pilot, A. (2013). An approach for design-based research focusing on design principles for science education: A case study on a relevant context for macro-micro thinking. In T. Plomp & N. Nieveen (Ed.), *Educational design research, Part B: illustrative cases*. Enschede: SLO, 619-640.

Merchant, Z., Goetz, E. T., Cifuentes, L., Keeney-Kennicutt, W., & Davis, T. J. (2014). Effectiveness of virtual reality-based instruction on students' learning outcomes in K-12 and higher education: A meta-analysis. *Computers & Education*, *70*, 29-40.

Mitchell, V. W., & Bakewell, C. (1995). Learning without doing – Enhancing oral presentation skills through peer-review. *Management Learning*, *26*(3), 353-366.

Moreno, R. (2004). Decreasing cognitive load for novice students: Effects of explanatory versus corrective feedback in discovery-based multimedia. *Instructional Science, 32*, 99-113.

Morreale, S., Hackman, M., Ellis, K., King, K., Meade, P.A., & Pinello-Tegtmeier, L. (1993), *Assessing communication competency in the interpersonal communication course: A laboratory-supported approach*. Paper presented at the seventy-ninth annual meeting of the Speech Communication Association, Miami Beach, FL.

Morreale, S., Hugenberg, L., & Worley, D. (2006). The basic communication course at U.S. colleges and universities in the 21st century: study VII. *Communication Education, 55*(4), 415-437.

Morreale, S., Osborn, M. M., & Pearson, J. C. (2000). Why communication is important: A rationale for the centrality of the study of communication. *Journal of the Association for Communication Administration, 29*, 1-25.

Mossa, J. (1995). Topic synthesis: A vehicle for improving oral communication skills, comprehension and retention in higher education. *Journal of Geography in Higher Education, 19*(2), 143-150.

Mulder, M. (2014). Conceptions of Professional Competence. In: S. Billett, C. Harteis, H. Gruber (Ed.). *International Handbook on Research into professional and practice-based learning*. Dordrecht: Springer.

Mulder, M., Gulikers, J., Biemans, H.J.A., & Wesselink, R. (2010). The new competence concept in higher education: error or enrichment? Münk, D. & Schelten, A. (Hrsg.) *Kompetenzermittlung für die Berufsbildung. Verfahren, Probleme und Perspektiven im nationalen, europäischen und internationalen Raum*. Bonn: Bundesinstitut für Berufsbildung, 189-204.

Mulder, M. & Winterton, J. (2017). Introduction. In M. Mulder (Ed.), *Competence-based vocational and professional education. Bridging the worlds of work and education* (pp. 1-43). Cham: Springer.

Murdoch-Eaton, D., & Whittle., S. (2012). Generic skills in medical education: developing the tools for successful lifelong learning. *Medical Education, 46*(1), 120-128.

Murphy, K., & Barry, S. (2016). Feed-forward: students gaining more from assessment via deeper engagement in video-recorded presentations. *Assessment & Evaluation in Higher Education, 41*(2), 213-227.

Nelson, M., & Schunn, C. (2009). The nature of feedback: How different types of peer feedback affect writing performance. *Instructional Science, 37*(4), 375-401.

Ng, E. M. (2014). Using a mixed research method to evaluate the effectiveness of formative assessment in supporting student teachers' wiki authoring. *Computers & Education, 73*, 141-148.

Nichols, S., & Patel, H. (2002). Health and safety implications of virtual reality: a review of empirical evidence. *Applied ergonomics, 33*(3), 251-271.

Nicol, D. J. (2009). Assessment for learner self-regulation: Enhancing achievement in the first year using learning technologies. *Assessment & Evaluation in Higher Education, 34*(3), 335-352.

Nicol, D. J., & Macfarlane-Dick, D. (2006). Formative assessment and self-regulated learning: a model and seven principles of good feedback practice. *Studies in Higher Education, 31*(2), 199-218.

Nilsson, M. (2001). Student-taught review sessions: Fostering communication skills and reinforcing concepts. *Journal of Chemical Education, 78*(5), 628.

Noroozi, O., Biemans, H., & Mulder, M. (2016). Relations between scripted online peer feedback processes and quality of written argumentative essay. *The Internet & Higher Education, 31*(1), 20-31.

Noroozi, O., Weinberger, A., Biemans, H. J., Mulder, M., & Chizari, M. (2013). Facilitating argumentative knowledge construction through a transactive discussion script in CSCL. *Computers & Education, 61*, 59-76.

Noroozi, O., Biemans, H. J., Weinberger, A., Mulder, M., & Chizari, M. (2013). Scripting for construction of a transactive memory system in multidisciplinary CSCL environments. *Learning and Instruction, 25*(1), 1-12.

Noroozi, O., Weinberger, A., Biemans, H.J.A., Mulder, M., & Chizari, M. (2012). Argumentation-based computer supported collaborative learning (ABCSCL). A systematic review and synthesis of fifteen years of research. *Educational Research Review, 7*(2), 79-106.

Ozga, J., & Sukhnandan, L. (1998). Undergraduate Non-Completion: Developing an explanatory model. *Higher Education Quarterly, 52*(3), 316-333.

Panadero, E., & Jonsson, A. (2013). The use of scoring rubrics for formative assessment purposes revisited: A review. *Educational Research Review, 9*(0), 129-144.

Pasqualotti, A., & Freitas, C. M. D. S. (2002). MAT3D: a virtual reality modeling language environment for the teaching and learning of mathematics. *CyberPsychology & Behavior, 5*(5), 409–422.

Pereira, D., Flores, M. A., & Niklasson, L. (2015). Assessment revisited: a review of research in Assessment and Evaluation in Higher Education. *Assessment & Evaluation in Higher Education*, 1-25.

Phye, G. D., & Sanders, C. E. (1994). Advice and feedback: Elements of practice for problem solving. *Contemporary Educational Psychology, 19*(3), 286-301.

Pintrich, P.R., & Zusho, A. (2002). Student motivation and self-regulated learning in the college classroom. In J.C. Smart & W.G. Tierney (Ed.) *Higher education: Handbook of theory and research* (vol. XVII). New York: Agathon Press.

Pittenger, K., Miller, M., & Mott, J. (2004). Using Real-World Standards to Enhance Students' Presentation Skills. *Business Communication Quarterly, 67*(3), 327-336.

Popov, V., Noroozi, O., Barrett, J. B., Biemans, H., Teasley, S. D., Slof, B., & Mulder, M. (2014). Perceptions and experiences of, and outcomes for, university students in culturally diversified dyads in a computer-supported collaborative learning environment. *Computers in Human Behavior, 32*, 186-200.

Porte, M. C., Xeroulis, G., Reznick, R. K., & Dubrowski, A. (2007). Verbal feedback from an expert is more effective than self-accessed feedback about motion efficiency in learning new surgical skills. *The American Journal of Surgery, 193*(1), 105-110.

Price, M., Handley, K., Millar, J., & O'Donovan, B. (2010). Feedback: all that effort, but what is the effect?. *Assessment & Evaluation in Higher Education, 35*(3), 277-289.

Prins, F. J., De Kleijn, R., & Van Tartwijk, J. (2015). Students' use of a rubric for research theses. *Assessment & Evaluation in Higher Education*, 1-23.

Qurban, M. H., & Austria, R. D. (2009). Improving the communication skills of IS developers during requirements elicitation using experiential learning. *Journal of Information Systems Education, 20*(3), 301-311.

Ray, M. L. (1973). Psychological theories and interpretation of learning. Ward, S., & Robinson, T. S. (Ed.) *Consumer Behavior: Theoretical Source Book*. Englewood Cliffs, N. J.: Prentice Hall.

Reis, S. M., & Renzulli, J. S. (2010). Is there still a need for gifted education? An examination of current research. *Learning and Individual Differences, 20*(4), 308-317.

Reitmeier, C. A., & Vrchota, D. A. (2009). Self-assessment of oral communication presentations in food science and nutrition. *Journal of Food Science Education, 8*(4), 88-92.

Rezaei, A. R., & Lovorn, M. G. (2010). Reliability and validity of rubrics for assessment through writing. *Assessing Writing, 15*(1), 19-39.

Richards, D., & Taylor, M. (2015). A Comparison of learning gains when using a 2D simulation tool versus a 3D virtual world: An experiment to find the right representation involving the Marginal Value Theorem. *Computers & Education, 86*, 157-171.

Riva, G. (2003). Applications of virtual environments in medicine. *Methods of Information in Medicine 42*, 524–534.

Rubin, R. B., Rubin, A. M., & Jordan, F. F. (1997). Effects of instruction on communication apprehension and communication competence. *Communication Education, 46*(2), 104-114.

Sadler, R. (*1989). Formative assessment and the design of instructional systems.* Instructional Science, 18, 119-144.

Schunk, D. H. (2001). Social cognitive theory and self-regulated learning. In B. Zimmerman & D. Schunk (Eds.), *Self-regulated learning and academic achievement. Theoretical perspectives* (p. 125-151). Mahwah, NJ: Lawrence Erlbaum.

Shaw, V. (2001). Training in presentation skills: An innovative method for college instruction. *Education, 122*(1), 140-144.

Shute, V. J. (2008). Focus on formative feedback. *Review of Educational Research, 78*(1), 153-189.

Sitzmann, T. (2011). A meta-analytic examination of the instructional effectiveness of computer-based simulation games. *Personnel psychology, 64*(2), 489-528.

Slavin, R.E. (1986). Best-evidence synthesis: An alternative to meta-analysis and traditional reviews. *Educational Researcher, 15*(9), 5-11.

Smith, C. D., & King, P. E. (2004). Student feedback sensitivity and the efficacy of feedback interventions in public speaking performance improvement. *Communication Education, 53*(3), 203-216.

Smith, C. M., & Sodano, T. M. (2011). Integrating lecture capture as a teaching strategy to improve student presentation skills through self-assessment. *Active Learning in Higher Education, 12*(3), 151-162.

Spelt, E.J.H., Biemans, H.J.A., Tobi, H., Luning P.A., & Mulder M. (2009). Teaching and learning in interdisciplinary higher education: a systematic review. *Educational Psychology Review, 21*(4), 365-378.

Swanson, R. W., Spooner, H. J., Reeder, B. A., Haight, K. R., & Senthilsel, A. van (1992). Improving presentation skills of family medicine residents: a randomized controlled study. *Medical Education, 26*(3), 241-247.

Taylor, K., & Toews, S. (1999). Effective presentations: how can we learn from the experts? *Medical Teacher, 21*(4), 409-414.

Taylor, P. (1992). Improving graduate student seminar presentations through training. *Teaching of Psychology, 19*(4), 236-238.

Tobias, S., & Fletcher, J. D. (2010). Introduction. In S. Tobias & J. D. Fletcher (Ed.), *Computer games and instruction* (pp. 3–16). Charlotte, NC: Information Age.

Tomas, C. (2014). Marking and feedback provision on essay-based coursework: a process perspective. *Assessment & Evaluation in Higher Education, 39*(5), 611-624.

Topping, K. (1998). Peer assessment between students in colleges and universities. *Review of Educational Research, 68*(3), 249-276.

Tsaushu, M., Tal, T., Sagy, O., Kali, Y., Gepstein, S., & Zilberstein, D. (2012). Peer learning and support of technology in an undergraduate biology course to enhance deep learning. *CBE-Life Sciences Education, 11*(4), 402-412.

Tucker, M. L., & McCarthy, A. M. (2001). Presentation self-efficacy: Increasing communication skills through service-learning. *Journal of Managerial Issues, 13*(2), 227-244.

Van den Akker, J. (1999). Principles and methods of development research. In J. van den Akker, N. Nieveen, R. M. Branch, K. L. Gustafson & T. Plomp (Ed.), *Design methodology and developmental research in education and training* (p. 1-14). The Netherlands: Kluwer Academic Publishers.

Van den Berg, I., Admiraal, W., & Pilot, A. (2006). Design principles and outcomes of peer assessment in higher education. *Studies in Higher Education, 31*(3), 341-356.

Van Ginkel, S., Gulikers, J., Biemans, H., & Mulder, M. (2015). Towards a set of design principles for developing oral presentation competence: A synthesis of research in higher education. *Educational Research Review, 14*, 62-80.

Van Ginkel, S., Gulikers, J., Biemans, H., & Mulder, M. (2017a). The impact of the feedback source on developing oral presentation competence. *Studies in Higher Education, 42*(9), 1671-1685.

Van Ginkel, S., Gulikers, J., Biemans, H., & Mulder, M. (2017b). Fostering oral presentation performance: does the quality of feedback differ when provided by the teacher, peers or peers guided by tutor?. *Assessment and Evaluation in Higher Education, 42*(6), 953-966.

Van Haaren, M., & Van der Rijst, R. (2014). Teaching Talented Students at a Research-Intensive University. In M. V. C. Wolfensberger, L. Drayer & J. J. M. Volker (Ed.), *Pursuit of Excellence in a Networked Society: Theoretical and Practical Approaches* (pp. 39-46). Münster: Waxmann.

Vogel, J. J., Vogel, D. S., Cannon-Bowers, J., Bowers, C. A., Muse, K., & Wright, M. (2006). Computer gaming and interactive simulations for learning: A meta-analysis. *Journal of Educational Computing Research, 34*(3), 229-243.

Von Konsky, B. R., & Oliver, B. (2012). The iPortfolio: Measuring uptake and effective use of an institutional electronic portfolio in higher education. *Australasian Journal of Educational Technology, 28*(1), 67-90.

Voth, B., & Moore, M. (1997). The pedagogical values of video portfolios in basic public speaking courses. *Journal on Excellence in College Teaching, 8*(2), 87-105.

Wakimoto, D. K., & Lewis, R. E. (2014). Graduate student perceptions of eportfolios: Uses for reflection, development, and assessment. *The Internet and Higher Education, 21*, 53-58.

Wang, J., Zou, B., Wang, D., & Xing, M. (2013). Students' perception of a wiki platform and the impact of wiki engagement on intercultural communication. *System, 41*(2), 245-256.

Washer, P. (2007). Revisiting key skills: A practical framework for higher education. *Quality in Higher Education, 13*(1), 57-67.

Wesselink, R., Van den Elsen, E. R., Biemans, H. J. A., & Mulder, M. (2007). Competence-based VET as seen by Dutch researchers. *European Journal for Vocational Education and Training, 40*(1), 38-51.

Wiese, J., Varosy, P., & Tierney, L. (2002). Improving Oral Presentation Skills with a Clinical Reasoning Curriculum: A Prospective Controlled Study. *The American Journal of Medicine, 112*(3), 212-218.

Yalaki, Y. (2010). Simple formative assessment, high learning gains in college general chemistry. *Eurasian Journal of Educational Research, 40*, 223-241.

Yorke, M. (2003). Formative assessment in higher education: Moves towards theory and the enhancement of pedagogic practice. *Higher Education, 45*(4), 477-501.

Young, M. R., & Murphy, J. W. (2003). Integrating Communications Skills into the Marketing Curriculum: A Case Study. *Journal of Marketing Education, 25*(1), 57-70.

Zimmerman, B. (1995). Self-efficacy and educational development. In A. Bandura (Ed.), *Self-efficacy in changing societies* (p. 202–231). New York: Cambridge University Press.

Appendices

A

Appendix A Overview of the various characteristics of the reviewed publications (alphabetically ordered)

Author(s) and year	Number of participants	Selection of design characteristics as research foci of the learning environment	Oral presentation performance	Learning setting
Adams (2004)	14 international post-graduate students	Behaviour modelling	Self-efficacy regarding presenting	Seminar presentation skills, in an Integrated Bridging Program
Alshare and Hindi (2004)	142 (74% students and 26% instructors)	Opportunity to practice	Oral presentation skills	Integrated in business curriculum
Baker and Thompson (2004)	Inapplicable (conceptual publication)	Behaviour modelling, type of feedback, peer assessment and self-assessment	Oral presentation skills	Presentation skills course in business curriculum
Bayless (2004)	Inapplicable (conceptual publication)	Learning objectives, learning task and opportunity to practice	Oral presentation skills	Basic communication course in the business curriculum
Bourhis and Allen (1998)	Varying from 32 to 124, depending on the publications	Self-assessment	Oral presentation skills	Public speaking courses
Bower et al. (2011)	22 pre-service teachers (students)	Learning objectives, behaviour modelling, opportunity to practice, type of feedback, peer- and self-assessment	Oral presentation competence, communication apprehension	Integrated in methodology units for mathematics and languages
Brown and Morrissey (2004)	65 undergraduate students	Behaviour modelling, opportunity to practice and self-assessment	Self-efficacy and anxiety regarding presenting, oral presentation skills	Business communication course
Calcich and Weilbaker (1992)	105 undergraduate students	Learning task, opportunity to pracctice and peer assessment	Oral presentation competence	Sales presentations in a personal selling course
Carroll (2006)	Inapplicable (conceptual publication)	Learning task, opportunity to practice, type of feedback, peer assessment and self-assessment	Oral presentation competence	Oral sales presentations (role-plays) integrated in marketing based curricula
Chan (2011)	Inapplicable (conceptual publication)	Behaviour modelling, learning task, opportunity to practice and peer assessment	Oral presentation competence	Oral communication integrated in university undergraduate subjects

Author(s) and year	Number of participants	Selection of design characteristics as research foci of the learning environment	Oral presentation performance	Learning setting
Cheng and Warren (2005)	51 undergraduate Engineering students	Opportunity to practice and peer assessment	Oral presentation competence	Oral presentations integrated in an English for academic purposes subject
Clark and Jones (2001)	123 (first study), 61 (second study)	Learning objectives, learning task and opportunity to practice	Communication apprehension, oral presentation competence	Public speaking course (in traditional and online format)
De Grez et al. (2009a)	101 freshmen Business students	Learning objectives, behaviour modelling, learning task, opportunity to practice and self-assessment	Oral presentation skills, self-efficacy regarding presenting	Oral presentations integrated in a psychology course in business curr.
De Grez et al. (2009b)	73 freshmen Business students	Behaviour modelling, opportunity to practice and self-assessment	Oral presentation skills, self-efficacy regarding presenting	Oral presentations integrated in a psychology course in business curr.
De Grez et al. (2010a)	95 Engineering students	Opportunity to practice, type of feedback and peer assessment	Oral presentation skills	Oral Presentations integrated in a psychology course in business curr.
De Grez et al. (2010b)	95 Engineering students	Opportunity to practice and peer assessment	Oral presentation skills	Oral presentations integrated in a psychology course in business curr.
De Grez et al. (2012)	57 freshmen Business students	Behaviour modelling, learning task, opportunity to practice, type of feedback, peer assessment and self-assessment	Oral presentation skills	Presentations integrated in a bus. curr.
Dupagne et al. (2007)	72 public speaking students	Opportunity to practice and self-assessment	Oral presentation competence, communication apprehension	Basic public speaking course
Econopouly et al. (2010)	54 students (freshman to senior)	Behaviour modelling, learning task, opportunity to practice and peer assessment	Oral presentation competence	Oral presentations integrated in case studies in an undergraduate course
Grace and Gilsdorf (2004)	Inapplicable (conceptual publication)	Learning task and opportunity to practice	Oral presentation competence, communication apprehension	Oral communication skills integrated with accounting coursework in major
Green et al. (2005)	96 and 111 medical students	Behaviour modelling and opportunity to practice	Oral presentation skills	Oral case presentations in curriculum and practice
Haber and Lingard (2001)	12 third-year students and 14 teachers	Opportunity to practice	Oral presentation skills	Oral presentations integrated in a university-affiliated public hospital

Author(s) and year	Number of participants	Selection of design characteristics as research foci of the learning environment	Oral presentation performance	Learning setting
Hay (1994)	Inapplicable (conceptual publication)	Opportunity to practice and type of feedback	Oral presentation competence	Oral presentations integrated in university geography classes
Hill and Storey (2003)	Inapplicable (conceptual publication)	Behaviour modelling, opportunity to practice, peer assessment and self-assessment	Oral presentation competence	Presentation courses integrated in English language provision
Hinton and Kramer (1998)	188 students (in total)	Opportunity to practice and self-assessment	Oral presentation competence, communication apprehension	Basic public speaking course with self-directed videotape feedback
Houde (2000)	14 students in upper-level Biology course	Learning objectives, learning task, opportunity to practice and peer assessment	Oral presentation competence	Oral presentations (in-class symposia) integrated in Biology course
Jensen and Harris (1999)	306 students	Opportunity to practice and self-assessment	Oral presentation competence	Basic public speaking course (with public speaking portfolio)
Kerby and Romine (2009)	From 155 sophomore to 35 graduate stud.	Learning objectives, learning task, opportunity to practice and type of feedback	Oral presentation competence	Oral presentations integrated in undergraduate and graduate courses
Kim et al. (2005)	164 medical students	Opportunity to practice and type of feedback	Oral presentation skills	Oral case presentations integrated in the medicine core clerkship
King et al. (2000)	91 undergraduate students	Opportunity to practice and type of feedback	Oral presentation competence	Public speaking setting
Kolber (2011)	2 groups of three students	Learning objectives, learning task, opportunity to practice and peer assessment	Oral presentation skills	Oral presentations integrated in a Problem-Based Learning Biology course
Lane (2007)	12 undergraduate students (interviews)	Peer assessment and self-assessment	Oral presentation skills	Online presentations integrated in courses
Leeds and Maurer (2009)	160 sophomore Business students	Behaviour modelling, learning task and opportunity to practice	Communication apprehension	Oral presentations integrated in an information systems course
Levasseur et al. (2004)	23 instructors	Opportunity to practice and self-assessment	Oral presentation skills	Advanced public speaking courses

Author(s) and year	Number of participants	Selection of design characteristics as research foci of the learning environment	Oral presentation performance	Learning setting
Mitchell and Bakewell (1995)	45 undergraduate students	Learning objectives, opportunity to practice and peer assessment	Oral presentation skills	Oral presentations integrated in an undergraduate seminar program
Mossa (1995)	20 undergraduate to PhD-students	Behaviour modelling, learning task and opportunity to practice	Oral presentation competence	Oral presentations integrated in a collegiate geography classroom
Nilsson (2001)	Inapplicable (conceptual publication)	Learning task, opportunity to practice and peer assessment	Oral presentation skills	Oral presentation integrated 'student-taught review sessions' in curriculum
Pittenger et al. (2004)	44, 71 and 52 students	Learning objectives, behaviour modelling, learning task and opportunity to practice	Oral presentation competence	Business communication course
Qurban and Austria (2009)	5 Information System (IS) Developers	Learning task, opportunity to practice and self-assessment	Oral presentation competence	Oral presentations integrated during the stage of Requirements Elicitation
Reitmeier and Vrchota (2009)	35 senior students	Learning objectives, learning task, opportunity to practice, peer assessment and self-assessment	Oral presentation competence	Oral presentation integrated in seminar course within Food Science
Rubin et al. (1997)	884 undergraduate students	Opportunity to practice	Communication apprehension, oral presentation competence	Basic communication course
Shaw (2001)	Inapplicable (conceptual publication)	Learning task, opportunity to practice and peer assessment	Oral presentation skills	Presentations integrated and related to the theme of the course
Smith and King (2004)	91 undergraduate students	Learning task, opportunity to practice and type of feedback	Oral presentation competence	Basic communication course
Smith and Sodano (2011)	53 undergraduate students in total	Behaviour modelling, opportunity to practice and self-assessment	Oral presentation competence	Oral presentations integrated in a regular undergraduate course
Swanson et al. (1992)	10 first-year family medicine residents	Behaviour modelling, learning task, opportunity to practice and peer assessment	Oral presentation skills	Oral presentations integrated in a didactic presentation format
Taylor and Toews (1999)	Inapplicable (conceptual publication)	Opportunity to practice	Oral presentation competence	Oral presentations integrated in a discipline

Author(s) and year	Number of participants	Selection of design characteristics as research foci of the learning environment	Oral presentation performance	Learning setting
Taylor (1992)	29 first-year graduate students	Behaviour modelling, learning task, opportunity to practice and peer assessment	Oral presentation skills	Training program integrated in graduate courses of social science
Topping (1998)	Varying, depending on the publications	Opportunity to practice and peer assessment	Oral presentation competence	Varying learning environments depending on the reviewed publications
Tucker and McCarthy (2001)	127 undergraduate students	Learning objectives, behaviour modelling, learning task and opportunity to practice	Self-efficacy regarding presenting	Integrated in business courses and(/or) service-learning project
Voth and Moore (1997)	Inapplicable (conceptual publication)	Behaviour modelling, opportunity to practice and self-assessment	Oral presentation competence	Public speaking courses
Wiese et al. (2002)	62 third-year medical students	Behaviour modelling, learning task and opportunity to practice	Oral presentation skills	Presentations integrated in a medical curriculum during medical clerkships
Young and Murphy (2003)	118 students, 698 alumni	Learning objectives	Oral presentation competence	Comm. skills integrated into curriculum

English Summary

Introduction

Presenting is perceived as one of the core competencies of the higher educated professional. Scholars and educational policy makers address speaking in public as an essential ability for effective performance in varying working environments, career success and for effective communication in democratic societies. However, employers, irrespective of domain or sector, emphasize that young professionals often lack the competence to speak in public. Further, this competence is frequently regarded by individuals as a dominant fear in social situations. Therefore, specific attention is required as to the design of educational programs to develop oral presentation competence.

In the field of presentation research, oral presentation competence can be defined as: *"the combination of knowledge, skills, and attitudes needed to speak in public in order to inform, self-express, to relate and to persuade"* (De Grez, 2009, p. 5). This conceptualization of the construct of presentation competence is also adopted in this thesis (Mulder, 2014). Taking this definition into consideration, an important notion is the interrelatedness of cognition, behaviour and attitude towards presenting. Presentation curricula and learning environments in higher education should therefore pay explicit attention to these three components of oral presentation competence. Acquiring students' oral presentation competence has been facilitated in a wide range of academic disciplines in higher education institutions around the globe. However, encouraging such a complex ability is considered as a time-consuming activity by curriculum designers. This consideration fails to match the current trend in higher education to reduce in-class instruction time. The latter increases the pressure to optimize the instructional environment and to adopt evidence-based alternative approaches to instruction. In short, the design of oral presentation courses in higher education requires an effective (achievement of pre-defined learning outcomes addressing knowledge, skills and attitudes) and efficient (limited use of resources such as teaching time and budget) approach. However, previous presentation research showed a fragmented picture of effective learning environment characteristics that foster oral presentation competence.

To design both effective and efficient learning environments for developing this competence in higher education, a systematic and comprehensive perspective on instructional approaches for oral presentation competence development is needed in which the instruction, learning and

assessment sides of the learning environment are addressed (Biggs, 1996). Therefore, this thesis focuses, first, on the following research question: *What characterizes a comprehensive learning environment for developing oral presentation competence in the context of higher education?*

Problem Statement

The field of presentation research reveals an incomplete and fragmented picture of the relationships between characteristics of the learning environment and students' oral presentation competence or components thereof (De Grez et al., 2009a). Previous studies examined specific learning environment characteristics for developing oral presentation competence, as objects of study, simultaneously or in isolation. Further, effect studies on developing oral presentation competence present contradictory results. Finally, several conclusions are based on studies using non-experimental research methods. Besides studying one or more characteristics of the learning environment, as previous studies did, researchers should also link their findings to what is needed to develop effective and efficient learning environments for oral presentation competence acquisition. First of all, researchers should study effective learning environment characteristics for developing oral presentation competence to all aspects of the learning environment, containing the instruction, learning and assessment strategy, as previously argued by Biggs (1996) regarding the notion of 'constructive alignment'. Secondly, these effective learning environments should encourage all aspects of competence, being cognition towards presenting, the actual presentation behaviour and attitude towards presenting (Mulder, 2014). The outcome of research, starting from this comprehensive perspective of aligning key areas of course design and encouraging the three mentioned components of oral presentation competence, support to construct and formulate crucial design principles for developing this competence which facilitate follow-up empirical studies aiming to refine these principles.

In order to identify and classify key characteristics of effective learning environments for oral presentation competence development into a comprehensive theoretical framework, a systematic literature study was needed. Therefore, the review, described in Chapter 2, aimed at synthesizing previous studies into a comprehensive set of evidence-based and well-argued design principles for fostering oral presentation competence in higher education.

Based on this conducted review study, follow-up studies in this thesis focus on feedback, since the majority of educational design principles for developing oral presentation competence refer to formative assessment strategies. Although feedback is considered as one of the essential influences on learning and achievement, the type of feedback and the way it is provided can be effective

in different ways (Hattie & Timperley, 2007). Focusing on feedback in this field of presentation research could clarify how learning environments for developing oral presentation competence can be made more efficient in terms of instructional time. More insights into feedback processes could reveal whether peers could replace the function of teachers in providing feedback (see Chapter 3 and 4) or whether teacher feedback could be substituted by innovative technologies for delivering feedback (see Chapter 5).

Based on the elaboration of the problem statement of this thesis, the following research questions were formulated (see also Chapter 1):

- *What characterizes a comprehensive learning environment for developing oral presentation competence in higher education? (Chapter 2)*
- *To what extent does the development of students' oral presentation competence differ depending on commonly used feedback sources (i.e. teacher, peers, self, peers guided by tutor) in higher education? (Chapter 3)*
- *To what extent does the quality of feedback, directly provided after undergraduate students' presentation performance, differ between commonly used feedback sources (i.e. teacher, peers, peers guided by tutor) in higher education? (Chapter 4)*
- *What is the impact of a virtual reality-based task on developing students' oral presentation competence in higher education? (Chapter 5)*

Content and Main findings

Chapter 2 describes a systematic review that identifies and classifies relevant studies with the aim of deducing a set of design principles with underlying conceptual and empirical argumentations for developing oral presentation competence. Fifty-two publications from the last 20 years were selected through a systematic search in four scientific databases. Subsequently, all studies were categorized with respect to student characteristics, learning environment characteristics, learning processes and outcomes. The synthesis of these studies resulted in the formulation and construction of seven design principles, addressing the instruction, learning and assessment side of the learning environment. These design principles include the following learning environment characteristics: learning objectives, learning task, behaviour modelling, opportunity to practice, intensity and timing of feedback, peer assessment and self-assessment.

Chapter 3 reports the findings of a quasi-experimental study that examines the effectiveness of feedback sources, i.e. the teacher, peers, peers guided by tutor and the self, on 144 first-year undergraduate students' progression in cognition, behaviour and attitude towards presenting.

Therefore, mixed methods of multiple-choice tests and performance assessments using validated rubrics were adopted for data collection. Results demonstrated the superiority of teacher feedback for encouraging students' presentation behaviour, while cognition and attitude towards presenting developed significantly irrespective of the particular feedback source. However, the self-assessment condition revealed less impact on developing presentation behaviour and attitude compared to other feedback sources. Optimizing peer feedback and self-assessment requires knowledge about underlying feedback processes characterizing successful feedback of the various sources.

Chapter 4 focuses on the question to what extent the quality of feedback differs between commonly used feedback sources, such as the teacher, peers and peers guided by tutors. As such, this Chapter builds upon the findings of Chapter 3 which demonstrated the superiority of teacher feedback. It remained questionably to what extent teachers outperform other feedback sources in terms of feedback quality. Further, insights based on the findings of this Chapter could reveal how other feedback sources could increase the effectivity on developing students' presentation competence. Therefore, feedback processes conducted directly after 95 undergraduate students' presentations were examined in the following conditions: teacher feedback, peer feedback and peer feedback guided by tutor. All these processes were videotaped and analysed using a coding scheme that included seven feedback quality criteria deduced from the literature. Results showed that teacher feedback corresponds to the highest extent with the majority of the seven identified quality criteria. For four of the seven criteria, peer feedback guided by tutor scores higher than the peer feedback condition. Presentation skills courses in higher education should incorporate strategies directed to discussing perceptions of feedback and practicing providing feedback to increase the effectiveness of peer feedback.

Chapter 5 elaborates on the potential impact of virtual reality-based tasks for delivering feedback on students' oral presentation competence. This experimental study examines the effectiveness of a virtual reality-based task, in which undergraduate students present in a virtual environment and receive feedback generated by the system that is explained by the teacher, on students' cognition, behaviour and attitude towards presenting. The effects are compared with a control condition of a face-to-face presentation task with expert feedback based on teachers' observation. Students' performance was measured by means of multiple-choice tests, validated rubrics, and self-evaluation instruments. Significant improvements were revealed for all three components of competence without a significant difference between the conditions. Subsequently, self-evaluation tests demonstrated that student who presented in virtual reality (VR) perceived the feedback generated by the system as valuable regarding the detailed and

analytical characteristics. Follow-up studies should focus on to what extent virtual reality-based tasks could potentially reduce teaching staff costs in order to make the integration of these tasks in presentation courses both effective and efficient.

Scientific Relevance

First of all, this thesis constructs and formulates a set of design principles for an effective as well as an efficient design of the instructional environment fostering oral presentation competence in higher education. The added value of this set lies in both the comprehensive perspective and in supporting each design principle with underlying theoretical and empirical argumentations supporting these principles developing presentation competence in particular. However, it remains questionable to what extent all these seven principles are comparably effective. Therefore, future research should focus on whether a learning environment that is more characterized by the comprehensive set of principles leads to more development in students' oral presentation competence.

Second, since previous research revealed a fragmented picture of effective learning characteristics that foster oral presentation competence, the aim of this thesis was first, regarding this initial phase in presentation research, to construct a set of well-argued design principles for developing oral presentation competence. As a consequence, the component 'student characteristics', in terms of Biggs (2003), is scarcely included in the empirical studies aiming to refine this set of seven principles. Adopting several aspects of 'student characteristics' relating to feedback and self-regulation in future studies could generate more value to developing theory, since both components 'learning environment characteristics' and 'student characteristics' constitute learning processes influencing learning outcomes relating to oral presentation competence.

Thirdly, the premise of this dissertation was that the design of the learning environment for developing oral presentation competence requires a systematic approach that takes the instruction, learning and assessment side of the learning environment into account (Biggs, 1996). The empirical results in this dissertation support this premise, since the results of Chapter 3 and Chapter 5 revealed that all three components of students' oral presentation competence developed significantly in learning environments based on the set of seven essential principles fostering this competence. However, certain components of presentation competence are more sensible for a particular learning environment characteristic than the other components (see Chapter 3). Regarding the empirical findings of this thesis, it could be argued that feedback and, for example, learning objectives, as learning environment characteristics, should explicitly

be directed to foster the three components of oral presentation competence in order to ensure that the student develops in all three elements. Future research should focus on this assumption.

Fourthly, the comprehensive set of design principles for developing oral presentation competence could potentially also be applied to other academic competencies, which could strengthen the generalizability of the set. This assumption is supported by the fact that learning environment characteristics reveal similarities between varying academic and communication competencies, such as presentation competence (see Chapter 2) and argumentation competence (Noroozi et al., 2012). However, the specific interpretation and elaboration of the principles will differ depending on the intended competency and will require future research.

Furthermore, the constructed comprehensive set of design principles offers directions for future studies focusing on developing oral presentation competence in higher education as intended in the second Chapter of this dissertation. The empirical studies, described in Chapters 3, 4 and 5, refined the set of principles corresponding to the assessment strategy of learning environments fostering this competence (i.e, principles 5, 6 and 7, see Chapter 2), by (1) adapting existing principles and/or their supported argumentations and (2) formulating future research directed to potentially formulating new additional principles. First, the empirical arguments that support principle 5 (see Chapter 2), regarding the type of feedback, should be further analysed. Besides, aspects such as the timing of feedback, both content-related and form-related feedback criteria should be incorporated in the argumentations in order to ensure high quality feedback for developing oral presentation competence (see also Chapter 4). Further, the empirical argumentations of design principle 7, about self-assessment for developing this competence, should be adapted, since this feedback source appeared to have a limited impact on students' presentation performance (see Chapter 3). Second, since teacher feedback outperformed other feedback sources (such as peers, peers guided by tutors and the self), it is suggested to highlight the essence of the teachers regarding (1) their impacts on developing students' presentation competence (see Chapter 3) as well as (2) their ability to deliver high quality content- and form-related feedback (see Chapter 4). However, more research is needed towards the role of the component 'student characteristics' (see 3P model of Biggs) in order to acquire knowledge about teachers' potential influence on students' uptake of feedback, because of their authority as a result of their expertise and experience. Finally, more research on potential differential impacts of 'immediate feedback' versus 'delayed feedback', facilitated by virtual reality-based tasks, is needed for providing insights to potentially replace the role of the teacher by this form of technology for delivering feedback on presentation delivery aspects (see Chapter 5).

Practical Relevance

The presented comprehensive set of design principles in Chapter 2 offers opportunities for an effective as well as an efficient design of the instructional environment for developing oral presentation competence. Furthermore, the set of principles, derived from Chapter 2, could potentially be applied to foster other academic competencies. However, the specific elaboration and interpretation of the principles might differ depending on the intended competence or skill and will require future studies. In line with this, carefully designing feedback processes in academic skills courses leave challenges for curriculum designers, since feedback provided by teachers turned out to be crucial. Especially in times when student numbers rise, while instructional time and possibilities for teacher-student interactions diminish, it is essential to prepare peers before entering formative assessment processes in higher education to ensure high quality of feedback. This research project contributes to this by stressing the essence of paying attention to all seven quality criteria of feedback derived from the feedback literature (see Chapter 4). Finally, since (1) the effects of both the virtual reality and control condition of teacher feedback on oral presentation competence development (see Chapter 5) are comparable and (2) VR offers complementary feedback relative to teacher feedback based on observation, a potential barrier – for adopting virtual reality in education – is removed for curriculum designers. This finding supports the promise that VR might have positive impacts on students' oral presentation competence in the near future when VR becomes 'normal practice' and students become more familiar with the technology.

Nederlandse samenvatting

Inleiding

Mondeling presenteren wordt beschouwd als één van de kerncompetenties van de hoger opgeleide beroepsbeoefenaar. Wetenschappers en politici benadrukken het belang van spreken in het openbaar als een essentiële bekwaamheid om te functioneren op de arbeidsmarkt, voor het najagen van een succesvolle carrière én om effectief te communiceren in een democratische samenleving. Tegelijkertijd geven werknemers aan, ongeacht de karakteristieken van de sector, dat bij jonge werknemers de competentie om te presenteren meestal ontbreekt. Bovendien wordt deze competentie gezien als één van de meest prominente angsten in sociale situaties. Vandaar dat speciale aandacht noodzakelijk is bij het ontwerpen van onderwijsprogramma's die erop gericht zijn om mondeling presenteren te bevorderen.

In het onderzoeksveld dat zich richt op leren presenteren, wordt deze competentie gedefinieerd als *"de combinatie van kennis, vaardigheden en attituden die nodig zijn om te spreken in het openbaar met als doel om te informeren, zichzelf uit te drukken, te relateren en te overtuigen"* (De Grez, 2009, p. 5). Deze conceptualisering van het begrip competentie is tevens overgenomen in dit proefschrift (Mulder, 2014). Gelet op deze definitie vormt de onderlinge verwevenheid van de componenten cognitie, gedrag en houding ten aanzien van presenteren een belangrijk uitgangspunt. Leeromgevingen in het hoger onderwijs, waarin presenteren centraal staat, zouden daarom expliciet aandacht dienen te besteden aan deze drie bestanddelen van mondeling presenteren. Hoewel wereldwijd in diverse academische disciplines binnen het hoger onderwijs de ontwikkeling van studenten in deze bekwaamheid wordt gefaciliteerd, wordt het stimuleren van zo'n complexe vaardigheid door curriculumontwerpers beschouwd als een tijdrovende exercitie. Deze overweging komt echter niet overeen met de huidige trend in het onderwijs om instructietijd te verminderen. Als gevolg hiervan neemt de druk om leeromgevingen te optimaliseren toe en groeit de vraag om - op onderzoek gebaseerde alternatieve benaderingen gericht op instructie - te incorporeren in een onderwijsontwerp. Kortom, het ontwerp van leeromgevingen gericht op presenteren binnen het hoger onderwijs vereist een effectieve aanpak (het bereiken van vooraf gedefinieerde leerresultaten met betrekking tot kennis, vaardigheden en attituden) én een efficiënte aanpak (beperkte inzet van middelen zoals onderwijstijd en -budget). Uit eerder onderzoek bleek echter dat er een gefragmenteerd beeld bestaat van de relatie tussen leeromgevingskenmerken en de ontwikkeling van de competentie mondeling presenteren. Om zowel effectieve als efficiënte leeromgevingen te ontwerpen voor het bevorderen van deze

competentie is een systematisch een uitgebreid perspectief op onderwijskundige benaderingen nodig, waarin de cruciale onderdelen instructie, leeractiviteiten én assessmentstrategieën een plaats verwerven (Biggs, 1996). Vandaar dat dit proefschrift zich in de eerste plaats richt op de volgende onderzoeksvraag: Wat kenmerkt een allesomvattende (comprehensive) leeromgeving voor de ontwikkeling van de competentie mondeling presenteren in de context van het hoger onderwijs?

Probleemstelling

De huidige stand van onderzoek gericht op leren presenteren vertoont een onvolledig en gefragmenteerd beeld van de relaties tussen kenmerken van de leeromgeving en componenten van de competentie mondeling presenteren (De Grez et al., 2009a). Eerdere studies in dit veld onderzochten telkens één of juist enkele kenmerken van de leeromgeving als object van studie. Verder lieten effectstudies over mondeling presenteren tegenstrijdige resultaten zien. Tenslotte bleek dat verscheidene conclusies uit empirische onderzoeken gebaseerd zijn op niet-experimentele onderzoeksmethoden. Naast het bestuderen van één of meerdere kenmerken van de leeromgeving, zoals binnen eerdere studies de nadruk werd gelegd, zouden onderzoekers juist hun bevindingen dienen te koppelen aan wat nodig is om effectieve en efficiënte leeromgevingen te ontwikkelen voor het verwerven van de competentie mondeling presenteren.

Ten eerste zouden onderzoekers aandacht dienen te besteden aan alle kenmerken van de leeromgeving gelet op (1) instructie, (2) leeractiviteiten en (3) assessmentstrategieën, die, in lijn met de opvatting van Biggs (1996) over 'constructieve afstemming', de essentiële componenten van effectief onderwijsontwerp omvatten. Ten tweede zouden effectieve leeromgevingen alle componenten van de competentie moeten stimuleren, namelijk cognitie gericht op presenteren, het presentatiegedrag en de professionele houding ten aanzien van presenteren (Mulder, 2014). De resultaten van dit onderzoek, uitgaande van dit 'comprehensive perspectief', waarbij het verbinden van de kernonderdelen van onderwijskundig ontwerp met het stimuleren van de drie componenten van mondeling presenteren centraal staan, faciliteren zowel (1) de constructie van onderwijskundige ontwerpprincipes voor het ontwikkelen van deze competentie alsook (2) het initiëren van empirische studies die erop gericht zijn om deze principes verder te verfijnen.

Om de meest effectieve leeromgevingskenmerken gericht op presenteren te kunnen identificeren én in een theoretisch kader te plaatsen, was allereerst een systematisch literatuuronderzoek nodig. Derhalve was deze review, beschreven in hoofdstuk 2, gericht op het synthetiseren van eerdere

onderzoeken tot een set van zowel conceptueel als empirisch beargumenteerde ontwerpprincipes voor het bevorderen van de competentie mondeling presenteren in het hoger onderwijs.

Voortbouwend op het literatuuronderzoek richtten de empirische vervolgstudies in dit proefschrift zich op de rol van feedback om te leren presenteren, aangezien de meeste onderwijskundige ontwerpprincipes verwijzen naar strategieën voor formatieve toetsing. Hoewel feedback wordt beschouwd als één van de meest essentiële leeromgevingskenmerken om te leren presenteren, is de effectiviteit afhankelijk van het type feedback én de manier waarop dit middel wordt aangeboden (Hattie & Timperley, 2007). Een onderzoeksfocus gericht op feedback in dit presentatieonderzoek zou kunnen verhelderen hoe leeromgevingen efficiënter vormgegeven dienen te worden in termen van instructietijd. Tevens zou meer inzicht in feedbackprocessen kunnen uitwijzen of medestudenten de functie van docenten zouden kunnen overnemen bij het verzorgen van feedback in onderwijssituaties gericht op presenteren (zie hoofdstukken 3 en 4) en/of dat docenten zouden kunnen worden vervangen door innovatieve technologieën voor het leveren van feedback (zie hoofdstuk 5).

Op basis van een uitwerking van de probleemstelling in dit proefschrift zijn de volgende onderzoeksvragen uiteengezet (zie ook hoofdstuk 1):

- *Wat kenmerkt een comprehensive leeromgeving voor de ontwikkeling van de competentie mondeling presenteren in de context van het hoger onderwijs? (zie hoofdstuk 2)*
- *In hoeverre is de ontwikkeling van de competentie mondeling presenteren afhankelijk van de feedbackbron (d.w.z., de docent, medestudenten, medestudenten begeleid door een tutor of feedback op basis van zelfreflectie) in het hoger onderwijs? (zie hoofdstuk 3)*
- *In hoeverre verschilt de kwaliteit van feedback, die direct geleverd wordt na een mondelinge presentatie, tussen de meest gangbare feedbackbronnen (de docent, medestudenten en medestudenten begeleid door tutoren) in het hoger onderwijs? (zie hoofdstuk 4)*
- *In hoeverre kan de ontwikkeling van de competentie mondeling presenteren gestimuleerd worden door een Virtual Reality (VR) opdracht in het hoger onderwijs? (zie hoofdstuk 5)*

Resultaten

Hoofdstuk 2 beschrijft een systematische review die eerder gepubliceerde studies identificeert en classificeert met als doel om een reeks ontwerpprincipes te formuleren onderbouwd door conceptuele en empirische argumenten voor het ontwikkelen van de competentie mondeling presenteren. Tweeënvijftig publicaties uit de afgelopen twintig jaar werden geselecteerd via een systematische zoekactie binnen vier wetenschappelijke databases. Vervolgens werden alle studies

gecategoriseerd gelet op de volgende aspecten: studentkenmerken, leeromgevingskenmerken, leerprocessen en leeruitkomsten. De synthese van deze studies resulteerde in de constructie van zeven ontwerpprincipes die alle gerelateerd werden aan de drie essentiële componenten van een leeromgeving, namelijk: instructie, leeractiviteiten en assessmentstrategieën. Deze ontwerpprincipes omvatten de volgende leeromgevingskenmerken: leerdoelen, presentatieopdracht, voorbeeldgedrag, presentatieoefening, intensiteit en timing van feedback, peer feedback en self-assessment.

Hoofdstuk 3 rapporteert de bevindingen van een quasi-experimentele studie die het effect onderzoekt van de feedbackbron, d.w.z. de docent, medestudenten (peers), medestudenten begeleid door een tutor en feedback op basis van zelfreflectie, op de ontwikkeling van 144 eerstejaarsstudenten gelet op cognitie, gedrag en houding ten aanzien van presenteren. Voor het verzamelen van de onderzoeksgegevens werden verschillende methodieken ingezet waaronder meerkeuzetoetsen en beoordelingen van presentaties door gebruik te maken van gevalideerde rubrics. De resultaten toonden de superioriteit van feedback door de docent aan ten opzichte van andere feedbackbronnen als het gaat om het bevorderen van presentatiegedrag. Daarentegen bleek er sprake van een significante ontwikkeling in cognitie én houding ten aanzien van presenteren ongeacht de specifieke feedbackbron. Verder had de conditie met feedback op basis van zelfreflectie minder impact op de ontwikkeling van het presentatiegedrag én de houding ten aanzien van presenteren in vergelijking met de andere feedbackbronnen. Tenslotte kan gesteld worden dat het optimaliseren van peer feedback én feedback op basis van zelfreflectie meer kennis vereist van de onderliggende feedbackprocessen om tot hoogwaardig kwalitatieve feedback van de verschillende feedbackbronnen te komen.

Hoofdstuk 4 richt zich op de vraag in hoeverre de kwaliteit van feedback verschilt tussen frequent geraadpleegde feedbackbronnen in het hoger onderwijs, zoals de docent, medestudenten en medestudenten begeleid door een tutor. Als zodanig bouwt dit hoofdstuk voort op de bevindingen van hoofdstuk 3 waaruit de superioriteit van de docent als feedbackbron naar voren kwam. Ondanks deze resultaten blijft het twijfelachtig of docenten, in vergelijking tot andere feedbackbronnen, ook uitblinken in het leveren van een hogere kwaliteit aan feedback. Inzichten op basis van een onderzoek naar de kwaliteit van feedback zouden kunnen uitwijzen hoe andere feedbackbronnen de ontwikkeling van studenten in hun competentie mondeling presenteren kunnen versterken. Daarom werden de feedbackprocessen, die direct plaatsvonden na een individuele presentatie van 95 bachelorstudenten, geanalyseerd in de volgende feedbackcondities: de docent, medestudenten (peer feedback) en medestudenten begeleid door een tutor (peer feedback guided by tutor). Deze feedbackprocessen werden allen opgenomen

door videoapparatuur en geanalyseerd met behulp van een coderingsschema dat bestaat uit zeven kwaliteitscriteria van feedback die zijn afgeleid uit de literatuur. Uit de resultaten bleek dat feedback verzorgd door docenten in de hoogste mate overeenkomt met de meerderheid van de zeven geïdentificeerde kwaliteitscriteria. Voor vier van de zeven criteria scoort feedback door medestudenten, die begeleid worden door een tutor, hoger dan feedback verzorgd door medestudenten zonder de begeleiding van een tutor. Leeromgevingen die mondeling presenteren stimuleren zouden onderwijskundige strategieën dienen te incorporeren die gericht zijn op het bespreken van percepties over feedback en het oefenen met het geven van feedback om de effectiviteit van peer feedback te vergroten.

Hoofdstuk 5 benadrukt dat feedback essentieel is voor het aanleren van presentatievaardigheden, maar dat het onbekend is of deze competentie ook gestimuleerd kan worden door een innovatieve technologie. Deze experimentele studie onderzoekt de effectiviteit van een virtual reality opdracht, waarin studenten na afloop van een presentatie feedback ontvangen van een expert, op cognitie, gedrag én attitude gericht op presenteren. Instrumenten bestonden uit meerkeuzetoetsen en gevalideerde rubrics. De resultaten laten zien dat de drie componenten significant toenemen, maar dat er geen verschil is in impact tussen de experimentele en controle conditie met alléén expertfeedback. Uit een evaluatietest blijkt dat studenten uit de experimentele groep de analytische feedback waarderen, maar tegelijkertijd kritieken delen over het realisme van presenteren voor een virtueel publiek. Vervolgstudies zouden zich dienen te concentreren op de mate waarin virtual reality opdrachten in het onderwijs personeelskosten van docenten zouden kunnen verlagen om ervoor te zorgen dat het integreren van dit soort opdrachten kan leiden tot zowel effectieve als efficiënte leeromgevingen gericht op mondeling presenteren.

Wetenschappelijke relevantie

Ten eerste construeert en formuleert dit proefschrift een reeks ontwerpprincipes, voor een effectief én efficiënt ontwerp van de leeromgeving, die de competentie mondeling presenteren in het hoger onderwijs bevordert. De toegevoegde waarde van deze set ligt in zowel het 'comprehensive perspectief' als in de onderbouwing van elk principe met behulp van theoretische en empirische argumenten. Het blijft echter de vraag in hoeverre de zeven geformuleerde ontwerpprincipes qua effectiviteit vergelijkbaar zijn. Daarom dient toekomstig onderzoek zich te richten op de vraag of een leeromgeving die in meerdere mate wordt gekenmerkt door deze ontwerpprincipes leidt tot een sterkere ontwikkeling in mondeling presenteren dan een leeromgeving die gebaseerd is op slechts een gedeelte van deze set.

Ten tweede was het doel van dit proefschrift, gelet op het gefragmenteerde beeld van de relatie tussen leeromgevingskenmerken en de competentie mondeling presenteren, om in deze initiële fase van presentatieonderzoek een set van ontwerpprincipes te construeren. Als gevolg van deze onderzoeksfocus bleef de component 'studentkenmerken', in termen van Biggs (2003), onderbelicht binnen de uitgevoerde empirische onderzoeken die gericht zijn op het verfijnen van deze set ontwerpprincipes. Indien vervolgstudies diverse aspecten van studentkenmerken, zoals 'perceptie van feedback' en 'zelfregulatie', zouden integreren, genereert dat meerwaarde voor theorieontwikkeling in dit onderzoeksveld, omdat zowel leeromgevingskenmerken als studentkenmerken invloed hebben op de vorming van leerprocessen en uiteindelijk de leerresultaten gericht op mondeling presenteren bepalen.

Ten derde was het uitgangspunt van dit proefschrift dat het ontwerp van de leeromgeving voor het ontwikkelen van de competentie mondeling presenteren een systematische aanpak vereist die rekening houdt met de volgende essentiële componenten van een leeromgeving: instructie, leeractiviteiten en assessmentstrategieën (Biggs, 1996). De empirische resultaten in dit proefschrift ondersteunen dit uitgangspunt, omdat de resultaten uit hoofdstukken 3 en 5 laten zien dat alle componenten van de competentie mondeling presenteren zich significant ontwikkelen in leeromgevingen die gebaseerd zijn op het model van Biggs (1996). Bepaalde componenten van de competentie mondeling presenteren (zoals gedrag gericht op presenteren) bleken echter gevoeliger voor een bepaald leeromgevingskenmerk dan andere componenten (zoals cognitie en attitude gericht op presenteren). Op basis van de empirische resultaten kan gesteld worden dat leeromgevingskenmerken, zoals leerdoelen en feedback, expliciet gericht dienen te zijn op het bevorderen van de drie componenten van de competentie mondeling presenteren om ervoor te zorgen dat de student zich in alle opzichten significant ontwikkelt. Toekomstig onderzoek zou moeten uitwijzen of deze aanname klopt.

Ten vierde kan de set van ontwerpprincipes voor het ontwikkelen van de competentie mondeling presenteren ook mogelijk worden toegepast op het bevorderen van andere academische competenties, waardoor de generaliseerbaarheid van de set zou kunnen worden versterkt. Deze aanname wordt ondersteund door het feit dat leeromgevingskenmerken uit dit proefschrift overeenkomsten vertonen met andere academische en communicatieve competenties, zoals presenteren (zie hoofdstuk 2) en argumentatievaardigheden (Noroozi et al., 2012). Toch verschilt de specifieke interpretatie en uitwerking van elk principe afhankelijk van de te ontwikkelen competentie. Hiervoor is meer onderzoek nodig naar de generaliseerbaarheid van de set.

Ten vijfde biedt de reeks ontwerpprincipes aanwijzingen voor toekomstige studies die zich dienen te richten op het ontwikkelen van de competentie mondeling presenteren in het hoger onderwijs (zie hoofdstuk 2). De empirische studies, beschreven in hoofstukken 3, 4 en 5, zijn erop gericht om de ontwerpprincipes, behorende tot de assessmentstrategie, verder te verfijnen, door (1) bestaande principes en/of hun onderliggende argumentaties aan te passen en (2) toekomstig onderzoek te initiëren gericht op het mogelijk formuleren van nieuwe, aanvullende principes. Allereerst zouden de empirische argumenten die principe 5 (zie hoofdstuk 2), met betrekking tot de 'type of feedback', ondersteunen verder moeten worden geanalyseerd. Naast cruciale aspecten zoals de 'timing van feedback', zouden feedbackcriteria gericht op zowel (1) de inhoud als (2) de vorm moeten worden opgenomen in de empirische argumentatie van dit principe om de kwaliteit van feedback te garanderen binnen leeromgevingen gericht op presenteren (zie hoofdstuk 4). Verder dienen de empirische argumenten van ontwerpprincipe 7, over self-assessment, te worden aangepast, aangezien deze feedbackbron een beperkte invloed bleek te hebben op de ontwikkeling in presentatievaardigheden van studenten (zie hoofdstuk 3). Een tweede punt betreft het benadrukken van de cruciale rol die docenten vervullen in het leveren van feedback ten opzichte van andere feedbackbronnen. Vandaar dat in de empirische argumenten naar voren dient te komen dat docenten (1) als feedbackbron een significante invloed hebben op de ontwikkeling van presentatiegedrag (zie hoofdstuk 3) en (2) dat zij het vermogen hebben om feedback te verzorgen dat voldoet aan zowel inhoudelijke alsook vormtechnische kwaliteitscriteria (hoofdstuk 4). Echter dient meer onderzoek te worden verricht naar de mogelijke rol die de component 'studentkenmerken' (zie het 3P-model van Biggs) hierin speelt als het gaat over de potentiële invloed die docenten hebben op de opname van feedback door studenten, vanwege hun autoriteit als gevolg van hun expertise en ervaring. Tenslotte is meer onderzoek nodig naar potentiële differentiële effecten van 'directe feedback' versus 'vertraagde feedback' op de ontwikkeling van de competentie mondeling presenteren. Door gebruik te maken van virtual reality opdrachten kan worden geverifieerd of de docent - als feedbackbron - vervangen kan worden door deze innovatieve technologie voor het leveren van feedback op non-verbaal presentatiegedrag (zie hoofdstuk 5).

Praktische relevantie

De complete set van ontwerpprincipes biedt kansen voor een effectief en efficiënt ontwerp van leeromgevingen gericht op het ontwikkelen van de competentie mondeling presenteren. Bovendien kan deze reeks principes, afgeleid uit hoofdstuk 2, mogelijk worden toegepast in het hoger onderwijs om andere academische en communicatieve competenties te bevorderen. De specifieke uitwerking en interpretatie zal echter per ontwerpprincipe verschillen, afhankelijk

van de te ontwikkelen competentie en zal toekomstige studies hiernaar vereisen. In lijn hiermee verdient het faciliteren van feedbackprocessen in cursussen gericht op academische vaardigheden de nodige aandacht van curriculumontwerpers, omdat feedback verzorgd door de docent het meest effectief bleek te zijn. Vooral in tijden dat studentenaantallen toenemen, terwijl instructietijd vermindert en de mogelijkheden voor interactie tussen de docent en student afnemen, is het essentieel dat peers - voorafgaand aan feedbackprocessen - worden voorbereid met als doel om hoogwaardige feedback te kunnen garanderen. Dit onderzoeksproject draagt hiertoe bij door nadruk te leggen op het integreren van alle zeven criteria voor hoogwaardige feedback binnen feedbackprocessen (zie hoofdstuk 4). Tenslotte kan gesteld worden dat een potentiële belemmering voor het incorporeren van virtual reality opdrachten in leeromgevingen gericht op presenteren is weggenomen (zie hoofdstuk 5). Dit proefschrift toont immers dat (1) de effectiviteit van feedback op basis van een virtual reality opdracht én observatie door docenten vergelijkbaar is en (2) dat feedback op basis van deze twee condities als complementair kan worden bestempeld. Deze bevinding ondersteunt de verwachting dat virtual reality een positief effect kan hebben op het ontwikkelen van de competentie mondeling presenteren wanneer de inzet van deze innovatieve technologie binnen het hoger onderwijs gangbaar wordt en wanneer studenten hiermee vertrouwd raken.

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Stan

About the author

Stan van Ginkel was born on March 18, 1982, in De Bilt. After finishing his Master's Degree in 'Human Geography & Planning' in 2005 at the Utrecht University, he started as a geography teacher at the same department. Two years later, Stan continued his career as an academic skills trainer and educational consultant at the IVLOS Institute of the Utrecht University. As a co-coordinator of the Centre for Academic Skills, he taught several courses on study skills, research skills, oral presentation skills and scientific writing. During this period, he obtained his University Teaching Qualification. Further, he was actively involved as a curriculum designer in projects, both nationally and internationally, relating to academic skills development, assessment and evaluation, community building, e-learning and honours programmes. In 2012, he started his PhD trajectory on the topic of Academic Skills Training at the Education and Learning Sciences group of the Wageningen University & Research. Currently, Stan is working as a curriculum designer, teacher educator and educational researcher at the VR-Lab, which he founded in February 2017, within the teacher education institution Archimedes Institute and the Research Group Intelligent Data Systems of the University of Applied Sciences Utrecht.

Scientific publications

Van Ginkel, S., Gulikers, J., Biemans, H., Noroozi, O., Roozen, M., Bos, T., Van Tilborg, R., Van Halteren, M., & Mulder, M. (2019). Fostering oral presentation competence through a virtual reality-based task for delivering feedback. *Computers & Education*, *134*, 78-97. https://doi.org/10.1016/j.compedu.2019.02.006 (Impact Factor: 5.627).

Noroozi, O., Hatami, J., Bayat, A., Van Ginkel, S., Biemans, H., & Mulder, M. (2018). Students' online argumentative peer feedback, essay writing, and content learning: does gender matter? *Interactive Learning Environments*, 1-15. doi: 10.1080/10494820.2018.1543200 (Impact Factor: 1.604).

Van Ginkel, S., Gulikers, J., Biemans, H., & Mulder, M. (2017). Fostering oral presentation performance: does the quality of feedback differ when provided by the teacher, peers or peers guided by tutor? *Assessment and Evaluation in Higher Education*, *42*(6), 953-966. doi: 10.1080/02602938.2016.1212984 (Impact Factor: 1.877).

Van Ginkel, S., Gulikers, J., Biemans, H., & Mulder, M. (2017). The impact of the feedback source on developing oral presentation competence. *Studies in Higher Education*, *42*(9), 1671-1685. doi:10.1080/03075079.2015.1117064 (Impact Factor: 2.321).

Van Ginkel, S., Gulikers, J., Biemans, H., & Mulder, M. (2015). Towards a set of design principles for developing oral presentation competence: A synthesis of research in higher education. *Educational Research Review*, *14*, 62-80. doi:10.1016/j.edurev.2015.02.002 (Impact Factor: 5.204).

Professional publications (international)

Belboukhaddaoui, I. & Van Ginkel, S. (in press). Fostering oral presentation skills by the timing of feedback: an exploratory study in virtual reality. *Research on Education and Media.*

Van Eijl, P., Peeters, T., Moesker, H., Dillen, A., Pilot, A., & Van Ginkel, S. (2017). Honors programs as forerunner for 21st Century Skills? *Journal of the European Honors Council*, *2*(8), 1-15.

Van Ginkel, S., Laurentzen, R., Mulder, M., Mononen, A., Kyttä, J., & Kortelainen, M. J. (2017). Assessing oral presentation performance: designing a rubric and testing its validity with an expert group. *Journal of Applied Research in Higher Education*, *9*(3), 474-486.

Van Ginkel, S., Van Eijl, P., Pilot, A., & Zubizarreta, J. (2014). Fostering honours communities among commuter students. In M. V. C. Wolfensberger, L. Drayer & J. J. M. Volker (Ed.), *Pursuit of Excellence in a Networked Society: Theoretical and Practical Approaches* (pp. 101-108). Münster: Waxmann.

Van Ginkel, S., Van Eijl, P., Pilot, A., & Zubizarreta, J. (2012). Building a vibrant honors community among commuter students. *Journal of the National Collegiate Honors Council, 13*(2), 197-218.

Van Ginkel, S., Van Eijl, P., Pilot, A., & Zubizarreta, J. (2012). Honors in Master's Degrees: A New Perspective? *Journal of the National Collegiate Honors Council, 13*(2), 265-278.

Professional publications (national)

Bos, T. & Van Ginkel, S. (2017). Worden trainers en docenten overbodig? *Tijdschrift voor Ontwikkeling in Organisaties*, (4), 58-63.

Van Ginkel, S. & M. Van Ast (2017). Presentatievaardigheden en VR. In Van Ast, M., Bloemsma, J., Dijkstra, D., & Teeuwen, R. (Ed.), *Leren met AR / VR. Haal de wereld in de klas* (pp. 240-243). BoekTweePuntNul.

Pilot, A., Van Hout-Wolters, B., Jongepier, P., Van Ginkel, S., & Scheijen, W. (2016). *Studeer effectief*. Groningen: Noordhoff Uitgevers.

Van Ginkel, S., Van Eijl, P., & Pilot, A. (2014). De honours community: kenmerken, functies en strategieën. *Tijdschrift voor Hoger Onderwijs*, (31/32)4/1, 20-36.

Van Eijl, P., Van Ginkel, S., Pilot, A., & Hermsen, L. (2013). Stimuleren van een honours community. In R. Coppoolse, P. Van Eijl & A. Pilot (Ed.), *Hoogvliegers, ontwikkeling naar professionele excellentie* (pp. 165-176). Rotterdam: Rotterdam University Press.

Spil, S., Van Wingerden., A., & Van Ginkel, S. (2012). Leren met "head, heart and hands". In M. Wolfensberger & M. Lammers (Ed.), *The Phoenix Experience* (pp. 16-18). Den Haag: Sirius Programma.

Van Ginkel, S., Van Eijl, P., & Pilot, A. (2010). Honoursmaster: nieuw perspectief voor excellentiebevordering? *THEMA: Tijdschrift voor Hoger Onderwijs & Management, 2010*(5), 54-60.

Van Ginkel., S., Van Eijl, P., & Pilot, A. (2010). Honours in de masterfase. In P. Van Eijl, A. Pilot & M. Wolfensberger (Ed.), *Talent voor morgen* (pp. 117-123). Groningen: Noordhoff Uitgevers.

Van Ginkel, S., & Van Eijl, P. (2009). *Honours in de master. Inventarisatie van honoursprogramma's in de masterfase.* Universiteit Utrecht: IVLOS.

Van Ginkel, S. (2006). Drie Amerikaanse steden. In D. Ariaens, L. Kunnen, H. Nonnekes, F. Oedekerk & J. Remmers-Kamp (Ed.), *Terra: bovenbouw (vwo): deel A (tekstboek & opdrachten)* (pp. 39-45). Groningen: Noordhoff Uitgevers.

De Wilde, S., Kaspers, P., Van der Zwan, J., & Van Ginkel, S. (2006). Ruhrgebied: verrassend veelzijdig (onderwijsmateriaal). In L. Paul (Ed.), *Ruhrgebied: verrassend veelzijdig (excursiegids)*. Amsterdam: DIA.

Conference Presentations (selection)

Van Ginkel, S. (2019). *Learning to present in front of a virtual audience.* Paper presented at the ATEE Conference 2019. UK: Bath.

Van Ginkel, S. (2019). *Learning to present in front of a virtual audience.* Keynote at the International Conference on Developing Real Life Learning Experiences. Thailand: Bangkok.

Van Ginkel, S. (2019). *Virtual Reality for developing presentation skills.* Workshop at the International Conference on Developing Real Life Learning Experiences. Thailand: Bangkok.

Van Ginkel, S. (2019). *Virtual Reality for developing presentation skills. About Artificial Intelligence & Teacher Education.* Presentation for UNESCO. France: Paris.

Van Ginkel, S. (2018). *Virtual Reality for developing academic skills.* Workshop at the ICEFIL Conference. The Netherlands: Utrecht.

Van Ginkel, S. (2018). *The impact of immediate feedback on developing students' oral presentation competence: an exploratory study in VR.* Paper presented at the ATEE Conference 2018. Sweden: Gävle.

Van Ginkel, S. (2018). *Presenteren met impact. Onderzoek naar leerrendement met VR.* Keynote at Leren met VR. The Netherlands: Eindhoven.

Van Ginkel, S. (2018). *Learning to present in front of a virtual audience.* Paper presented at the ATEE Winter Conference 2018. The Netherlands: Utrecht.

Van Vugt, F., Van den Bogaart, T., & Van Ginkel, S. (2017). *Blended Lesson Study.* Paper presented at the WALS Conference. Japan: Nagoya.

Van Ginkel, S., Gulikers, J., Biemans, H., Bos, T., Van Tilborg, R., Van Halteren, M., & Mulder, M. (2017). *Virtual Reality om te leren presenteren: een exploratieve studie.* Paper presented at the Onderwijs Research Dagen (ORD) 2017 Conference. Belgium: Antwerp.

Van Ginkel, S., Gulikers, J., Biemans, H., & Mulder, M. (2016). *The impact of the feedback source on developing oral presentation competence.* Paper presented at the International Fall School 2016 Conference. Germany: Bad Schussenried.

Van Ginkel, S., Gulikers, J., Biemans, H., & Mulder, M. (2016). *Fostering oral presentation performance: does the quality of feedback differ when provided by the teacher, peers or peers guided by tutor?.* Paper presented at the Competence 2016 Conference. The Netherlands: Wageningen.

Van Ginkel, S., Gulikers, J., Biemans, H., & Mulder, M. (2016). *Towards a set of design principles for developing oral presentation competence: A synthesis of research in higher education.* Paper presented at the Competence 2016 Conference. The Netherlands: Wageningen.

Van Ginkel, S., Gulikers, J., Biemans, H., & Mulder, M. (2016). *The impact of the feedback source on developing oral presentation competence.* Paper presented at the AERA 2016 Conference. US: Washington, DC.

Van Ginkel, S., Gulikers, J., Biemans, H., & Mulder, M. (2015). *The impact of the feedback source on developing oral presentation competence.* Paper presented at the National Fall School 2015 Conference. The Netherlands: Utrecht.

Van Ginkel, S., Laurentzen, R., & Botman, S. (2015). *Assessing oral presentation performance in higher education.* Paper presented at the ESEE & AIAEE 2015 Conference. The Netherlands: Wageningen.

Van Ginkel., S., & Mononen, A. (2015). *Assessing oral presentation performance in higher education.* Paper presented at the Unexpected Encounters 2015 Conference. Finland: Porvoo.

Van Ginkel, S., Pilot, A., & Mulder, M. (2015). *21st Century Skills.* Introduction Presented at the Netwerk Academische Communicatieve Vaardigheden (NACV) Conference. The Netherlands: Wageningen.

Van Ginkel, S., & Laurentzen, R. (2014). *Academic Skills Training.* Paper presented at the 'Onderwijstheorie, -praktijk en -prestatie in agrifood en groene ruimte' Conference 2014. The Netherlands: Wageningen.

Van Ginkel, S., Gulikers, J., Biemans, H., & Mulder, M. (2014). *Developing oral presentation competence in higher education.* Poster presented at the Onderwijs Research Dagen (ORD) 2014 Conference. The Netherlands: Groningen.

Van Ginkel, S., & Mulder, M. (2014). *Towards a set of design principles for developing oral presentation competence.* Paper presented at the HETL 2014 Conference. US: Anchorage, Alaska.

Botman, S., Laurentzen, R., & Van Ginkel, S. (2014). *Het beoordelen van de competentie mondeling presenteren.* Paper presented at the Netwerk Academische Communicatieve Vaardigheden (NACV) Conference. The Netherlands: Nijmegen.

Van Ginkel, S., Gulikers, J., Biemans, H., & Mulder, M. (2013). *Developing oral presentation competence in higher education.* Poster presented at the National Fall School 2013 Conference. The Netherlands: Maastricht.

Van Ginkel, S., Van Eijl, P., & Pilot, A. (2012). *De honours community.* Paper presented at the Onderwijs Research Dagen (ORD) 2012 Conference. The Netherlands: Wageningen.

Van Eijl, P., Van Ginkel, S., & Pilot, A. (2011). *De honours community: een stimulans voor excellentie.* Paper presented at the VOR Sirius Conference. The Netherlands: Den Haag.

Van Ginkel, S., Van Eijl, P., Pilot, A., & Zubizarreta, J. (2011). *Building a vibrant honors community among commuter students.* Paper presented at the NCHC 2011 Conference. US: Phoenix, Arizona.

Van Ginkel, S., & Van Eijl, P. (2011). *Honourscommunities als motor voor een cultuur van excellentie.* Paper presented at the EHON Conference. The Netherlands: Utrecht.

Van Ginkel, S., Van Eijl, P., Pilot, A., & Zubizarreta, J. (2010). *Honors in Master's Degrees: A New Perspective?* Paper presented at the NCHC 2010 Conference. US: Kansas City, Missouri.

Van Ginkel, & Van Eijl, P. (2009). *Honours in the masterfase. Inventarisatie van honoursprogramma's in de masterfase.* Paper presented at the VOR Sirius Conference. The Netherlands: Utrecht.

Van Ginkel, S., & Van Eijl, P. (2009). *Honoursprogramma's en academische vaardigheden.* Paper presented at the Netwerk Academische Communicatieve Vaardigheden (NACV) Conference. The Netherlands: Utrecht.

Van Ginkel, S., & de Jong, B. (2007). *Het Actorendebat.* Paper presented at the Netwerk Academische Communicatieve Vaardigheden (NACV) Conference. The Netherlands: Leiden.

in the context of the research school

ico

Interuniversity Centre for Educational Research

Stan van Ginkel
Completed Training and Supervision Plan
Wageningen School of Social Sciences (WASS)

Wageningen School of Social Sciences

Name of the learning activity	Department/ Institute	Year	ECTS*
A) Project related competences			
ICO Introduction Course	ICO	2012	7.1
Competence Theory and Research	WASS/ICO	2012	3.6
Domain-specific Instruction	ICO	2013	3.6
ICO Fall School	ICO	2013/15	7.1
Research Synthesis	ICO	2015	4.0
International Fall School	ICO	2016	4.0
B) General research related competences			
WASS Introduction Course	WASS	2012	1.0
Information Literacy	WUR library	2012	0.6
Research Methodology (Proposal)	WASS	2012	4.0
Qualitative Data Analysis	ICO/WASS	2013	4.0
Multi-level analysis	ICO	2016	4.0
PhD Manuscript Meetings/Open Space	ECS	2015	2.0
C) Career related competences/personal development			
'Towards A Set of Design Principles for Developing Oral Presentation Competence in Higher Education'	HETL, United States	2014	1.0
'De rubric mondeling presenteren: een werkbare tool voor het beoordelen van presentatievaardigheden?	ECS 50-yrs, The Netherlands	2014	1.0
'Het construeren en valideren van een rubric mondeling presenteren in het hoger onderwijs'	NACV, The Netherlands	2015	1.0
'Developing Oral Presentation Competence in Higher Education: Seven Design Principles'	Encounters, Finland	2015	1.0
'Assessing Oral Presentation Performance in Higher Education'	ESEE, The Netherlands	2015	1.0
'The Impact of The Feedback Source on Developing Oral Presentation Competence'	AERA, United States	2016	1.0
'Fostering Oral Presentation Performance: Does the Quality of Feedback Differ When Provided by the Teacher, Peers or Peers Guided by Tutor?'	Competence, The Netherlands	2016	1.0
Total			52.0

*One credit according to ECTS is on average equivalent to 28 hours of study load.

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