Educational Research Review 14 (2015) 62–80

Contents lists available at ScienceDirect

Educational Research Review

journal homepage: www.elsevier.com/locate/edurev

Review

Towards a set of design principles for developing oral presentation competence: A synthesis of research in higher education

Stan van Ginkel *, Judith Gulikers, Harm Biemans, Martin Mulder

Department of Education and Competence Studies, Social Sciences Group, Wageningen University, The Netherlands

ARTICLE INFO

Article history:
Received 17 February 2014
Received in revised form 15 February 2015
Accepted 17 February 2015
Available online 26 February 2015

Keywords:
Oral presentation competence
Learning environment
Educational design principles
Instruction
Higher education

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 sides 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.

Contents

* Corresponding author Tel.: +31 624 48 83 41; fax: +31 317 48 45 73.
E-mail address: stan.vanginkel@wur.nl (S. van Ginkel).

http://dx.doi.org/10.1016/j.edurev.2015.02.002
1747-938X/

1. Introduction

One of the core competencies for higher educated professionals relates to the ability to present (e.g. Campbell, Mothersbaugh, Brammer, & Taylor, 2001; Hinton & Kramer, 1998; Smith & Sodano, 2011). In this study, professional competence is regarded as an overarching concept of being a competent professional that entails a range of underlying competencies of which giving oral presentations is part of communication competence (Mulder, 2014). In the context of higher education, this competence domain is considered as essential for effective performance of graduates in various working environments (e.g. Dunbar, Brooks, & Kubicka-Miller, 2006; Fallows & Steven, 2000; Smith & Sodano, 2011), for career success and for effective participation in the democratic society (e.g. Chan, 2011; Hinton & Kramer, 1998). The ability to present is also recognized by policy makers around the world as an important qualification of higher educated graduates. This emphasis is evident in the Dublin Descriptors, in which one of the five higher education qualifications refers to 'communicating' (Joint Quality Initiative, 2004). The European policy makers introduced, through the Dublin Descriptors, a framework of qualifications that all higher education institutions are required to adopt. The 'communication' component in these descriptors refers to 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, professionals from several domains emphasize that graduates often lack the competence to speak in public (Chan, 2011). In addition, public speaking is often described as the most prevalent fear that individuals experience in social situations (Smith & Sodano, 2011). Moreover, besides the essence of communicating in professional life, students regularly underestimate the amount of time professionals spent on meetings and other forms of communication (Morreale, Osborn, & Pearson, 2000). Therefore, specific attention is required as to the design of educational programmes to develop oral presentation performance. Previous research in this field showed a fragmented picture of effective learning environment characteristics that foster oral presentation competence (De Grez, Valcke, & Roozen, 2009b). The goal of this paper is to synthesize these fragmented studies into a set of design principles for higher education that (1) address the instruction, learning and assessment sides of the learning environment (Biggs, 1996); (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. By adopting a systematic approach, this set of principles offers a comprehensive, but concrete perspective for the design of education courses aiming at oral presentation competence development, as well as for a research agenda in this field.

1.1. Defining oral presentation competence

De Grez (2009, p. 5) defines oral presentation competence as: "*the combination of knowledge, skills, and attitudes needed to speak in public in order to inform, self-express, to relate and to persuade*", which is consistent with the conceptualization of the construct of oral presentation competence in this study (Mulder, 2014). Thus, an important notion considering the concept of oral presentation competence is the interrelatedness of the cognitive, behavioural and affective domains (Bower, Cavanagh, Moloney, & Dao, 2011). Students' performance can be enhanced or inhibited by any one or all of these components. For example, improving students' knowledge about communication may improve their ability to communicate, which, in turn, may increase their willingness to communicate (Bower et al., 2011, p. 313). In addition, students' anxiety negatively influences their performance (Brown & Morrissey, 2004). However, research indicates that communication anxiety can be reduced through practicing a series of oral presentations (Rubin, Rubin, & Jordan, 1997). Oral presentation courses in higher education should therefore address these various components of oral presentation competence and their interrelatedness.

1.2. Oral presentation competence in higher education

Being able to present is a complex skill (e.g. Kaye, 1994; Morreale et al., 1993). However, the acquisition of oral presentation competence has become increasingly essential for a wide range of disciplines within the academic field, such

as Biology, Business, Communication, Engineering and Health (Dunbar et al., 2006). In a range of higher education curricula, courses are incorporated that centre on oral presentation skills (Cooper, 2005; Morreale, Hugenberg, & Worley, 2006). A number of studies have examined the provision of 'academic skills interventions' at tertiary level and have demonstrated that learners often lack the competence required for success after their educational programme (e.g. Lea & Street, 1998; Lowe & Cook, 2003; Ozga & Sukhnandan, 1998). Also with respect to oral presentation competence, several studies emphasize that accounting, business, medical and technical professionals have often not reached the required level for practice after the completion of their education (e.g. Brown & Morrissey, 2004; Chan, 2011; Grace & Gilsdorf, 2004; Kerby & Romine, 2009; Pittenger, Miller, & Mott, 2004). More attention to educating communication competence in higher education is required (e.g. Alshare & Hindi, 2004; Hay, 1994; Mulder, Gulikers, Biemans, & Wesselink, 2010). To develop this competence in higher education, Chan (2011) stressed that students and teachers need to, primarily, understand the importance of the development of presentation competence. In addition, overcoming the lack of willingness and confidence in certain academic fields, as well as finding the time and space in the curriculum to address these areas, may be difficult (Chan, 2011). Developing oral presentation competence is frequently regarded as a time-consuming activity (e.g. Chan, 2011; De Grez, Valcke, & Roozen, 2009a). This consideration does not correspond with 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 approaches to direct instruction (De Grez et al., 2009a, p. 293). This challenge is further strengthened given the pressure on curricula in higher education to encourage students' performances related to several academic and communication competencies in limited time (e.g. Chan, 2011; Pittenger et al., 2004; Young & Murphy, 2003). In short, the design of oral presentation courses in higher education requires an effective (achievement of educational objectives) and efficient (short period of time and limited budget) approach, perhaps more integrated with 'real-world' situations (e.g. Chan, 2011; Pittenger et al., 2004).

1.3. Developing oral presentation competence

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 sides 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).

1.4. 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. 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).

2.1. 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. 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 variables, the following action verbs were selected: *develop*, *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.

2.3. 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.

2.4. 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 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 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, Biggs's 3P model (2003) of teaching and learning in universities was adopted as the 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's model in these former reviews, in this study teaching and learning are 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

Table 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

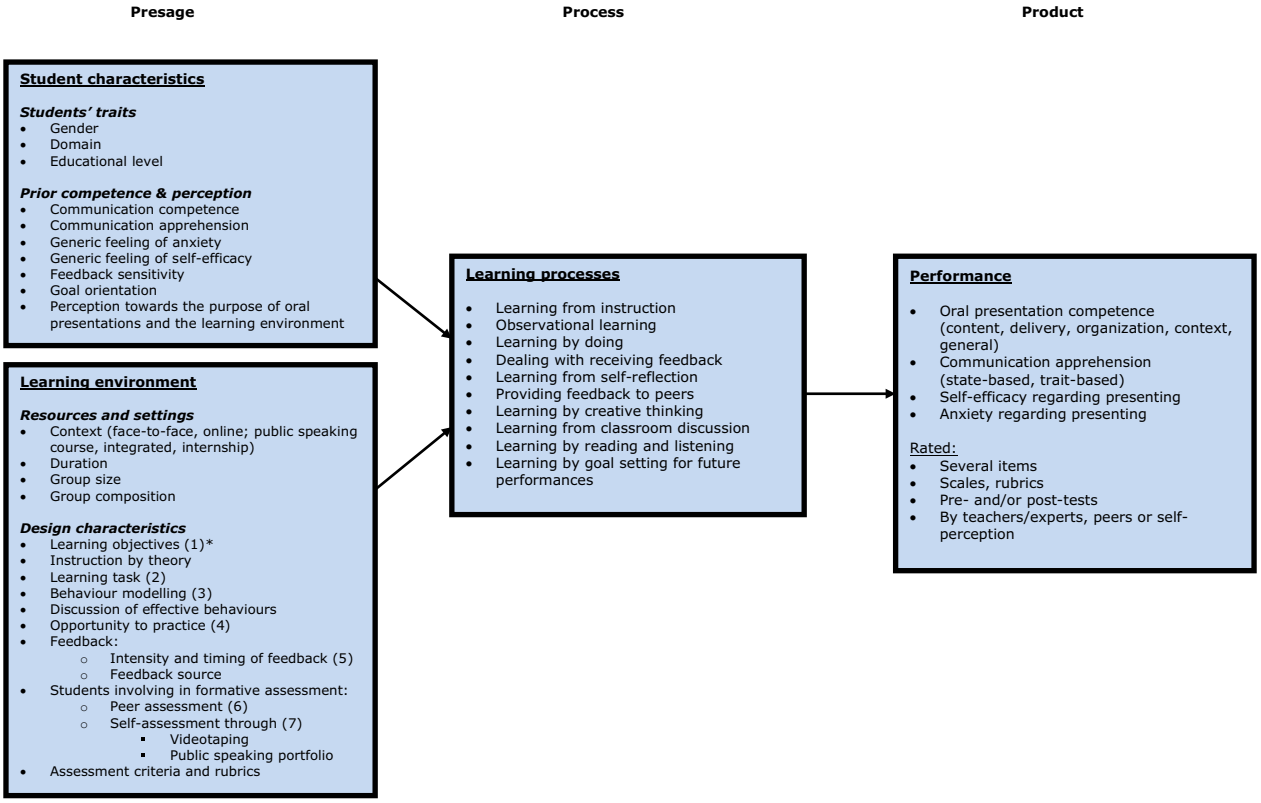

Fig. 1. Framework 'Developing oral presentation competence in higher education: synthesis of the reviewed studies' (based on the original 3P model of Biggs, 2003). **The numbers refer to the design principles in the result section.*

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's 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 et al., 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 Fig. 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 plenarily 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 argumentations were 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 the 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.

3. Results

Based on the overall framework in Fig. 1, this section describes the resulting seven educational design principles for promoting oral presentation competence in higher education (see Fig. 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

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.

Fig. 2. Seven design principles for developing oral presentation competence in higher education.

to underpin the particular principle is described and discussed. For each paragraph, an extensive overview was developed consisting of all empirical evidence for that particular educational design principle. Because of concerns such 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.

3.1. The instruction

3.1.1. 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 the 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., 2009a, 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. De Grez et al., 2009a; Schunk, 2001).

Regarding the empirical evidence supporting this design principle, the 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 and 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; Mitchell & Bakewell, 1995; Tucker & McCarthy, 2001). De Grez et al. (2009a) studied this characteristic of the learning environment in more 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.

3.1.2. Learning task

Design principle 2: Ensure that the learning task – the presentation assignment – is related to the 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, & 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) increase 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 contents, ordering these tasks from simple to complex and practicing for real audiences.

3.2. The learning activities

3.2.1. 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. Taylor, 1992; Tucker & McCarthy, 2001) and studies using expert models, for example teachers or other professionals (e.g. Econopouly et al., 2010; Swanson et al., 1992). 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. De Grez et al., 2009b; Pittenger et al., 2004; Taylor, 1992). Other researchers adopted 'expert' models and also reported significant improvements of students' oral presentation competencies (e.g. Econopouly et al., 2010; Swanson et al., 1992). 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.

3.2.2. 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 et al., 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 and 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. Smith & Sodano, 2011; Swanson et al., 1992), reducing communication apprehension (e.g. Leeds & Maurer, 2009; Rubin et al., 1997), improving self-efficacy and increasing confidence (e.g. Rubin et al., 1997; Tucker & McCarthy, 2001). 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 more 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 presentations. 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 performances. Future research should focus on this issue in order to empirically refine the learning progress of practicing presentations.

3.3. The assessment strategy

3.3.1. 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 et al., 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 amongst the major influences on learning and achievement (Hattie, 2009), the type of feedback and the way it is given can be differentially effective (Hattie & Timperley, 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, it was found that high feedback-sensitive students 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.

3.3.2. 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. Econopouly et al., 2010; Shaw, 2001) and collaborative learning (e.g. Kolber, 2011; Nilsson, 2001) that engage students (Econopouly et al., 2010) and encourage a higher sense of responsibility in feedback procedures (e.g. Cheng & Warren, 2005; Shaw, 2001; Topping, 1998). Peers assessing other students' presentations also encourage 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 more 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 & 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.

3.3.3. 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. The 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; Lane, 2007; Qurban & Austria, 2009; Reitmeier & Vrchota, 2009) in addition to other essential stages within these cycles, such as 'practicing presentations' and 'reflection on presentations of others'. The 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. Dupagne et al., 2007; Hinton & Kramer, 1998) 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.

4. Concluding remarks, limitations and directions for future research

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 sides 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's (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 Fig. 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.

4.2. Limitations

Although the publications for this review were traced from varying domains, countries and journals, these articles are biased in relation 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 Review 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 Fig. 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.

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, enquiring 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 the 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 studied both in the context of regular speaking courses and in domain-specific settings (see Appendix). 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 & 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 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.

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 the 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.

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 practice 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
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.

(*continued on next page*)

Appendix A. (*continued*)

Author(s) and year	Number of participants	Selection of design characteristics as research foci of the learning environment	Oral presentation performance	Learning setting
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 integrated 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
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 students	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
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 programme
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

(*continued on next page*)

Appendix A. (*continued*)

Author(s) and year	Number of participants	Selection of design characteristics as research foci of the learning environment	Oral presentation performance	Learning setting
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
Taylor (1992)	29 first-year graduate students	Behaviour modelling, learning task, opportunity to practice and peer assessment	Oral presentation skills	Training programme 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 the curriculum

References

Adams, K. (2004). Modelling success: Enhancing international postgraduate research students' self-efficacy for research seminar presentations. Higher Education Research & 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.

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. Englewood Cliffs, NJ: Prentice-Hall.

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.

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.

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.

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.
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.
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., & 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. (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 & Education, 53(1), 112–120.
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.
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.
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.
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.
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.
Fink, A. (2010). Conducting research literature reviews: From the Internet to paper (3rd ed.). Los Angeles, CA: Sage Publications.
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), 263–267.
Gulikers, J., Bastiaens, T. H., & Kirschner, P. (2004). A five-dimensional framework for authentic assessment. Educational Technology Research and Development : ETR & D, 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.
Hattie, J. (2009). The power of feedback. Auckland: Faculty of Education/University of Auckland.
Hattie, J., & Timperley, H. (2007). The power of feedback. Review of Educational Research, 77(1), 81–112.
Hay, I. (1994). Justifying and applying oral presentations in geographical education. Journal of Geography in Higher Education, 18(1), 43–55.
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.
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.
Jensen, K. K., & Harris, V. (1999). The public speaking portfolio. Communication Education, 48(3), 211–227.
Joint Quality Initiative. Shared 'Dublin' descriptors for short cycle, first cycle, second cycle and third cycle awards. (2004). <www.jointquality.nl/content/CompletesetDublinDescriptors.doc> (accessed 18.10.04.).
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.
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, 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.
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.
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.
Leeds, E. M., & Maurer, R. A. (2009). Using digital video technology to reduce communication apprehension in business education. INFORMS 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.
Lowe, H., & Cook, A. (2003). Mind the gap: Are students prepared for higher education? Journal of Further and Higher Education, 27(1), 53–76.
McCroskey, J. C. (1970). Measures of communication bound anxiety. Speech Monographs, 37(4), 269–277.
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 (Eds.), Educational design research, part B: Illustrative cases (pp. 619–640). Enschede: SLO.

Mitchell, V. W., & Bakewell, C. (1995). Learning without doing – Enhancing oral presentation skills through peer-review. Management Learning, 26(3), 353–366.
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 (Eds.), International handbook on research into professional and practice-based learning. Dordrecht: Springer.
Mulder, M., Gulikers, J., Biemans, H. J. A., & Wesselink, R. (2010). D. Münk & A. Schelten. (Eds.), Kompetenzermittlung für die Berufsbildung. Verfahren, Probleme und Perspektiven im nationalen, europäischen und internationalen Raum (pp. 189–204). Bonn: Bundesinstitut für Berufsbildung.
Nilsson, M. (2001). Student-taught review sessions: Fostering communication skills and reinforcing concepts. Journal of Chemical Education, 78(5), 628.
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.
Pittenger, K., Miller, M., & Mott, J. (2004). Using real-world standards to enhance students' presentation skills. Business Communication Quarterly, 67(3), 327–336.
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. In S. Ward & T. S. Robinson (Eds.), Consumer behavior: Theoretical source book. Englewood Cliffs, N. J.: Prentice Hall.
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.
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.
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 (pp. 125–151). Mahwah, NJ: Lawrence Erlbaum.
Shaw, V. (2001). Training in presentation skills: An innovative method for college instruction. Education, 122(1), 140–144.
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., & van Senthilsel, A. (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.
Topping, K. (1998). Peer assessment between students in colleges and universities. Review of Educational Research, 68(3), 249–276.
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 (Eds.), Design methodology and developmental research in education and training (pp. 1–14). The Netherlands: Kluwer Academic Publishers.
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.
Wesselink, R., Van den Elsen, E. R., Biemans, H. J. A., & Mulder, M. (2007). Competence-based VET as seen by Dutch researchers. European Journal of Vocational 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.
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 (pp. 202–231). New York: Cambridge University Press.