**Introduction**

Internships account for a considerable part of the curriculum within nursing training programmes. The effectiveness of these internships depends on personal and environmental factors. Personal characteristics have an effect on how a student manifests himself, such as learning style and independence in learning (Vermunt, 1992). The characteristics of the environment are decisive for the possibilities offered to students to develop themselves. During the past years, specific attention has been paid to the development of practice environments in which learning plays a central role, the so-called powerful learning environments. Examples are apprenticeships (Havekes & Drenth, 2005), the learning departments, the nursing workplace (Ritzen, 2007) and the care innovation centre (Hoogwerf, 2011).

This study investigates whether there is a relation between the internship posts in which interns study and work and the effect thereof on their development in terms of self-efficacy. Previous studies have shown that there is a relation between the level of self-efficacy and its effect on learning: results demonstrate that self-efficacy stimulates the motivation to study and promotes the use of cognitive and self-regulating strategies (Van Dinther, Dochy & Segers, 2011; Lent, Brown & Hackett, 2002). Baeten, Kindt Struyven and Dochy (2010), on the basis of a literature review, conclude that students with a high level of self-efficacy apply a more in-depth approach to the subject matter. Van Dinther et al. (2011), Bandura (2006) and Schunk and Pajares (2001) emphasise the mediating role in the acquisition of competencies. This makes it relevant to devote attention to the setup of learning environments that promote the level of self-efficiency.

**Self-efficacy**

The self-efficacy concept originates from the social-cognitive theory and was developed by Bandura (1997). Self-efficacy beliefs determine how people feel, how they think, motivate themselves and how they behave (1997). The perception of how a person views himself is an essential element in the self-efficacy construct: ‘beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments’ (1997). The level of self-efficacy determines which activities a person undertakes, the amount of effort a person applies to ensure the activity is successful, and a person's resolve in handling and overcoming difficulties (Bandura, 1997; Zulkosky, 2009).

**Powerful learning environment**

A learning climate must be present in order to learn in practice (Gobben, Schell & Damoiseux, 2007). This involves facilities and a culture that enable learning in practice (Van Aken & Grotendorst, 2002). Simons (1999) defines learning environments as follows: ‘the interaction of all measures, materials and forms of supervision aimed at facilitating the learning process’. In recent decades, the emphasis has been on establishing what makes a powerful learning environment. See Bolhuis and Simons (2001), Braams and Havekes (2003) and Gobbens et al. (2007). Simons (1999) describes powerful learning environments as environments where students are challenged to actively study with each other. The learning objective is clear and it takes places in a specific and authentic context. The learning process is central to learning environments and requires particular conditions. Braams and Havekes (2003) identify ‘bearing responsibility’ and ‘working in a team’ as such conditions. Onstenk (1994) states the need for ‘ample information provision’ and ‘possibilities to reflect’. Simons (1999) summarises a number of quality criteria which a powerful learning environment must meet (see Table 1).

*Table 1*

*Quality Criteria of a Powerful Learning Environment (Simons, 1999)*

A powerful learning environment

1. is ‘complete’, ‘rich’ and ‘realistic’
2. encourages activity
3. transfers the navigation of the learning process to the student, step by step
4. must involve students in all components of the learning process, where possible
5. offers possibilities to practice in a large variety of learning formats and learning activities
6. must encourage students to develop their learning attitude and learning skills in such a way that they are in a better position to adopt various forms of self-study and can combine their experiential learning with reflection and self-study
7. takes account of differences in how students learn and in the development of their learning ability
8. is aimed at the systematic development of students’ awareness of their own competency.

**Powerful learning environments and self-efficacy**

The care innovation centres designed by Fontys School of Nursing together with care institutions meet the described criteria of a powerful learning environment. Care innovation centres have been established within various healthcare domains and although the context is decisive for the nature of the activities to be carried out and learned, care innovation centres share a number of characteristics. The number of interns within departments is considerable: depending on the size of the department, this varies from 4 to 18 interns. In comparison: within regular internship posts this number is often limited to 1 or 2 interns. The ratio of contracted staff to interns varies from 1:1 to 1:3. Each centre is affiliated with a lecturer who spends an average of two days a week at the centre. The work of the lecturer consists of providing vocational education, supervising improvement processes, leading and facilitating peer supervision sessions for students, and coaching staff members. There is a close working relationship with the care institution: developing the learning climate is a joint effort. The setup of the environment is such that students are continuously made aware of what they may or may not possess in terms of skills and knowledge. The work supervisor acts as a role model, instructor or coach, depending on the intern's level. Reflection on the activities, thoughts and feelings of the intern is continuous and systematic (several times each day). The activities described above also take place within regular internship posts, though less frequently and often less explicitly or systematically. Without wishing to depreciate regular internship posts: learning processes at care innovation centres take a more prominent place compared to regular internship posts.

Bandura (1997) states that there are four information sources on which self-efficacy is based. They are mastery experience, vicarious learning, verbal persuasion and physiological arousal. These sources are explicitly present at care innovation centres. This is illustrated and explained below by a number of examples.

Carrying out various tasks independently, even if they are of a complex nature, is vital to the learning process (Bolhuis, 2003), and is typical for what occurs at care innovation centres. Interns are ready to perform tasks independently sooner than in regular internship posts. Participating in care, in the form of delegating responsibilities within an authentic context, are the principal source and base of self-efficacy: the experience (mastery experience) is regarded as the main factor in determining the level of self-efficacy (Bandura, 1997; Steyn & Mynhardt, 2006). Tasks must be challenging: successes that come too easily do not contribute to a lasting sense of self-efficacy. The application of an effort followed by success convinces the student that he has these capacities in his skill-set. This lowers the threshold to step into new situations (Bandure, 1997).

Seeing others in action (vicarious learning), both fellow interns and care professionals operating at an equal or higher level, is an explicit feature of care innovation centres, thanks to the considerable number of interns present. Reciprocal observations are critically discussed during structured evaluation moments attended by professionals. Students exchange how to handle certain situations, thereby learning from each other. Bolhuis and Simons (2001) note that groups have a positive effect on learning from individual members. For that reason, group learning is central to care innovation centres (Snoeren & Frost, 2011), which contributes to self-efficacy (Margolis, 2005).

Reflection occurs before, during and after the intervention of the student (Dekker & Tenbült, 2011), with the supervisor acting as a critical partner. For this see the work of Schön (1991), who points out the importance of the indicated forms of reflection. In addition to what the student still needs to learn, the focus during evaluation and reflection is on skills already present, which has a positive effect on the development of self-efficacy (verbal persuasion). Students also participate in peer supervision, focusing on one’s own thoughts, feelings and interventions, and those of fellow interns. Frequent and structured self-reflection, self-evaluation and the evaluation of fellow interns contribute to a safe atmosphere on the basis of which students can develop themselves (Van Gennip, Segers & Tillema, 2009). Encouraging reflection is seen as a task of lecturers and workplace trainers (Ritzen, 2007). The presence of lectures and/or workplace trainers at care innovation centres increases the effectiveness of learning, particularly by emphasising reflection on interventions, emotions and thoughts. Reflection takes place via reflection models, achieving more structure and depth (Stultiens, Niessen & Van Ool, 2011).

Students are encouraged and motivated to undertake activities that they find challenging. Confronting challenging and/or new situations arouses some anxiety, expressed in e.g. a higher pulse or perspiration. As students engage repeatedly with stressful situations, these symptoms (of physiological arousal) will diminish. These experiences, too, are a topic of reflection.

Regular internship posts also reflect on the interventions of the students, but at care innovation centres this is pursued more deliberately and explicitly. The sources on which self-efficacy is based do not have a direct effect on the level of self-efficacy: these sources need to be processed cognitively (Van Dinther et al., 2011). Care innovation centres provide an explicit structure offering room to reflect on these experiences. According to Bolhuis (2003), learning by making things explicit, reflecting and sharing knowledge requires a deliberate effort. If this effort is not made, knowledge remains implicit and is not subjected to critical reflection.

**Objective and hypothesis**

The objective of this study is to examine whether there is a relation between doing an internship at a care innovation centre and self-efficacy among HBO nursing interns. The following hypothesis applies in this study: internships at a care innovation centre lead to a higher development of self-efficacy among HBO nursing interns than regular internships.

**Method**

**Design**

The research design is quasi-experimental: non-equivalent pre-test/post-test control group design. The experimental intervention consists of offering a powerful learning environment. Interns at care innovation centres form the intervention group, whereas interns in a regular setting represent the control group.

**Population**

All regular students at Fontys School of Nursing who completed their internships in the period February-July 2011 were contacted to participate in the survey. This concerns interns who completed workplace periods (Wpl) 1, 2, 3 (in the second, third and fourth academic year respectively) in either a regular setting or at a care innovation centre. Other interns, such as students studying for MBO nursing qualification and interns following a work-study programme (employed by an institution combined with nursing training programme) were excluded; this group has considerably more work experience, which may distort the results. The internship allocation - and hence the allocation to either the intervention or control group - was performed by the internship planning office. The process did not set out to achieve a balanced distribution in terms of academic year, internship experience, age or sex. Students may state their preference for an internship post, but cannot derive any rights from it. The availability of internship posts at care institutions is the primary determinant in the allocation of internship posts to students.

**Data collection**

The questionnaire is fielded for the first time a few weeks after the start of the internship period (February 2011). The second time is at the end of the internship period (June 2011). In order to secure the highest possible response, the questionnaires are completed during reflection meetings supervised by lecturers. All interns are obliged to participate in these reflection meetings, but participation in the survey was voluntary. The data was processed anonymously, precluding the possibility of linking the data of respondents in measurements 1 and 2. The questionnaires included a written instruction, and the supervising lecturer was instructed by the researchers. The questionnaire consisted of ten items that measure self-efficacy (see Table 2). This list, the General Self-Efficacy scale (GSE), has been developed by Schwarzer and Jeruzalem (1995). This instrument was chosen on account of the large diversity of contexts and domains in which internships are done. Specific self-efficacy measuring instruments do not suit this study due to the context-specific nature. The GSE is often used in scientific research (Luszczynska, Scholz & Schwarzer, 2005; Luszczcynska,Gutiérrez-Doña & Schwarzer, 2005). The GSE has been used by Kameg, Clochesy, Mitchell and Suresky (2010) to measure the effect of simulation on self-efficacy within communication skills among nursing students and by Lauder et al., (2008) to measure the relation between self-efficacy and competencies among nursing students. The GSE has been extensively researched and tested in no fewer than 25 countries. The reliability and validity of the instrument are good. Cronbach’s alpha varies between 0.75 and 0.91 (31). Scoring is based on a five-point Likert scale (a score of 1 representing a low level and 5 a high level of self-efficacy), with response categories ranging from ‘not applicable at all’ to ‘fully applicable’. In addition, the following variables were included: age, sex and internship number (students complete three internship periods). This served to determine whether the groups are comparable in terms of composition.

*Table 2*

*General Self-Efficacy Scale (Schwarzer & Jerusalem, 1995)*

1. I always succeed in solving difficult problems, provided I make the required effort.
2. If someone makes things difficult for me, I will find other ways to get what I want.
3. I find it easy to stick to my plans and achieve my goal.
4. I trust that I can effectively deal with any unexpected events.
5. Thanks to my resourcefulness, I know how to act in unforeseen circumstances.
6. I can solve most problems, provided I make the necessary effort.
7. I remain calm in the face of difficulties, as I trust my ability to solve problems.
8. When confronted with a problem, I often have multiple solutions.
9. When I find myself in a precarious situation, I usually know what to do.
10. Whatever happens, I deal with it.

**Data analysis**

The data was analysed using SPSS version 17.0. The total group of respondents was divided into two groups: regular interns and interns doing their internships at a care innovation centre (referred to as ‘ZIC’ interns). To determine whether the groups are comparable in terms of composition, t-tests (age) and chi-square tests (sex and workplace learning) were carried out. Subsequently, t-tests were carried out to establish the relation between independent variable internship formats and independent variable self-efficacy (measured with the GSE). This was done initially for the total group of respondents, followed by analyses at subgroup level. Here the effect of internship format and internship experience on self-efficacy was determined. The applied significance level for all tests was 0.05.

**Results**

A total of 62 regular and 47 ZIC interns took part in the first measurement, and 52 and 40 interns in the second measurement, respectively. Percentage-wise this is a reduction in response of 16% (regular) and 15% (ZIC). It is unclear whether this lower response was due to absence when the GSE was conducted or whether the internship was terminated prematurely. No information is available for this. Table 3 demonstrates the group characteristics for measurements 1 and 2. The groups are comparable in terms of age and sex. The average age during measurement 1 is 21.9 (sd: 4.9) for regular interns 21.9 for ZIC interns (sd: 5.1). For measurement 2 this is 21.9 (sd: 3.9) and 22.1 (sd: 5,6) respectively. In terms of internship experience, there is a significant difference between both measurements (p < 0.05).

*Table 3*

*Group Characteristics at Measurement 1 and 2*

**Measurement 1**

**n m SD min/max t p**

Age Regular 62 21.9 4.9 18-47 0.049t 0.961

ZIC 47 21.9 5.1 18-53

**n m/v χ2  df p**

Sex Regular 62 10/52 0.169\* 1 0.681 ZIC 47 9/38

Wpl 1 Reg./ZIC 35/16 6.760\* 2 0.034

Wpl 2 Reg./ZIC 9/15

Wpl 3 Reg./ZIC 18/16

**Measurement 2**

**n m SD min/max t p**

Age Regular 52 21.9 3.9 18-35 -0.159t 0.874

ZIC 40 22.1 5.6 19-53

**n m/v χ2 df p**

Sex Regular 52 7/45 0.018\* 1 0.892

 ZIC 40 5/35

Wpl 1 Reg./ZIC 29/12 6.101\* 2 0.047

Wpl 2 Reg./ZIC 11/14

Wpl 3 Reg./ZIC 12/14

*\**Chi square-test, tt-test

The results of measurement 1 on GSE scores are shown in Table 4. The total group of regular interns scores significantly higher on three out of ten items compared to the group of ZIC interns. As is clear from the subgroup analysis, regular Wpl 1 interns in measurement 1 score significantly higher on four GSE items compared to the ZIC interns. At Wpl 2 and 3 this is the case for one item.

*Table 4*

*Comparison between regular and ZIC interns according to Wpl (total and 1, 2 and 3) on GSE score measurement 1*

**WPL total (n = 62/47) Wpl 1 (n = 35/16)**

*Item M sd t p M sd t p*

1 reg 3,69 0,80 0,1368 0,174 3,57 0,85 0,930 0.358

 zic 3,48 0,75 3,37 0,62

2 reg 2,97 0,87 1,916 0,580 2,94 0,91 1,189 0,241

 zic 2,68 0,69 2,69 0,60

3 reg 3,61 0,82 2,653 0,090 3,69 0,90 2,245 0,033

 zic 3,19 0,82 3,06 0,93

4 reg 3,47 0,72 1,474 0,144 3,51 0,74 2,506 0,018

 zic 3,26 0,77 2,93 0,77

5 reg 3,39 0,71 3,420 0,010 3,37 0,69 2,749 0,011

 zic 2,91 0,72 2,75 0,77

6 reg 3,94 0,70 0,847 0,399 3,77 0,65 0,882 0,383

 zic 3,83 0,60 3,63 0,50

7 reg 3,45 0,76 2,100 0,038 3,40 0,74 1,366 0,184

 zic 3,13 0,82 3,06 0,85

8 reg 3,26 0,79 0,735 0,464 3,26 0,92 0,027 0,979

 zic 3,15 0,75 3,25 0,86

9 reg 3,23 0,66 2,581 0,011 3,17 0,62 2,159 0,041

 zic 2,89 0,67 2,69 0,79

10 reg 3,63 0,68 0,979 0,330 3,51 0,70 0,493 0,627

 zic 3,49 0,78 3,38 1,02

**Wpl 2 (n = 9/15 Wpl 3 (n = 18/16)**

*Item M sd t p M sd t p*

1 3,78 0,83 0,507 0,619 3,89 0,68 1,50 0,144

3,60 0,83 3,50 0,82

2 3,11 0,60 1,622 0,121 2,94 0,94 0,865 0,393

2,67 0,72 2,69 0,79

3 3,78 0,44 2,666 0,014 3,39 0,78 0,051 0,960

3,13 0,74 3,38 0,81

4 3,00 0,50 -1,331 0,197 3,61 0,70 0.453 0,654

3,33 0,72 3,50 0,73

5 3,11 0,60 0,499 0,627 3,56 0,78 1,915 0,065

3,00 0,38 3,00 0,89

6 4,00 0,87 0,000 1,000 4,22 0,65 1,473 0,151

4,00 0,53 3,88 0,72

7 3,44 0,73 1,248 0,229 3,56 0,86 0,992 0,329

3,22 0,44 0,666 0,513 3,28 0,67 0,639 0,528

8 3,07 0,70 3,25 0,93

3,07 0,70 3,13 0,72

9 3,33 0,71 0,948 0,358 3,28 0,75 1,492 0,146

3,07 0,59 2,94 0,57

10 3,44 0,53 -1,028 0,319 3,94 0,64 2,147 0,040

3,67 0,49 3,44 0,73

The total group of respondents shows a significant increase between measurements 1 (n = 109) and 2 (n = 92) in terms of self-efficacy (see table 5). All GSE items show a statistical increase that is significant (p =< 0.05)

*Table 5*

 *t-test comparison between the results of measurements 1 and 2 for the total group of interns, regular interns and ZIC interns*

**Total group interns (n = 109/92) Regular interns (n = 62/52)**

 m sd t p m sd t p

item 1 t1 3,60 0,78 -2822 0,006 3,69 0,80 -1,771 0,083

 t2 3,90 0,65 3,94 0,70

item 2 t1 2,84 0,80 -3,797 0,000 2,96 0,87 -1,625 0,107

 t2 3,27 0,79 3,23 0,85

item 3 t1 3,43 0,84 -3,677 0,000 3,61 0,82 -1,526 0,126

 t2 3,86 0,84 3,87 0,92

item 4 t1 3,37 0,74 -4,399 0,000 3,47 0,72 -2,632 0,009

 t2 3,82 0,70 3,85 0,80

item 5 t1 3,18 0,75 -4,786 0,000 3,39 0,71 -2,089 0,036

 t2 3,70 0,79 3,69 0,83

item 6 t1 3,88 0,66 -2,357 0,019 3,94 0,70 -1,798 0,075

 t2 4,11 0,65 4,17 0,71

item 7 t1 3,31 0,80 -4,203 0,000 3,45 0,76 -1,208 0,225

 t2 3,78 0,78 3,63 0,84

item 8 t1 3,21 0,77 -2,210 0,028 3,26 0,79 -1,433 0,158

 t2 3,45 0,73 3,46 0,73

item 9 t1 3,08 0,68 -4,919 0,000 3,23 0,66 -1,857 0,060

 t2 3,60 0,79 3,50 0,87

item 10 t1 3,57 0,72 -3,574 0,000 3,63 0,68 -2,067 0,038

 t2 3,95 0,76 3,92 0,81

**Zic interns (n = 47/40)**

m sd t p

3,49 0,75 -2,331 0.025

3,83 0,59

2,68 0,69 -4,313 0,000

3,33 0,69

3,19 0,82 -4,120 0,000

3,88 0,72

3,26 0,77 -3,813 0,000

3,80 0,56

2,91 0,72 -5,121 0,000

3,73 0,75

3,83 0.60 -1,543 0,128

4,03 0,58

3,13 0,82 -5,324 0,000

3,98 0,66

3,15 0,75 -1,713 0,090

3,43 0,75

2,89 0,67 -5,922 0,000

3,73 0.64

3,49 0,78 -3,072 0,003

3,98 0,70

Regular interns show a significant increase in the GSE score on items 4, 5 and 10. ZIC interns show a significant increase with the exception of items 6 and 8. A further analysis of the period of workplace learning combined with the internship variant (see Table 6) demonstrates that in Wpl 1, ZIC interns show a significant increase for seven out of ten items compared to five out of ten for regular interns. ZIC interns in Wpl 2 show very modest growth: two items score significantly higher. Regular interns do not show significant growth for any of the items. In Wpl 3, ZIC interns score significantly higher on eight out of ten items, compared to three out of ten for regular interns.

*Table 6*

*T-test Comparison Results of Measurements 1 and 2 for Variant and Workplace Period*

**Wpl 1 regular/ZIC**

**n m SD t p**

Item 1 t1 35/16 3.57/3.38 0.85/0.62 -2.409/-1.198 0.020/0.243

t2 29/12 3.97/3.67 0.42/0.65

Item 2 t1 2.94/2.69 0.91/0.60 -1.193/-3.660 0.238/0.001

t2 3.21/3.58 0.86/0.67

Item 3 t1 3.69/3.06 0.90/0.93 -3.060/-2.620 0.761/0.015

 t2 3.76/3.92 0.99/0.79

Item 4 t1 3.51/2.94 0.74/0.77 -2.006/-2.706 0.049/0.012

 t2 3.90/3.67 0.77/0.65

Item 5 t1 3.37/2.75 0.69/0.77 -2.017/-2.854 0.048/0.009

 t2 3.72/3.67 0.70/0.89

Item 6 t1 3.77/3.63 0.65/0.50 -3.440/-2.138 0.001/0.042

 t2 4.28/4.00 0.53/0.43

Item 7 t1 3.40/3.06 0.74/0.85 -1.123/-2.591 0.266/0.016

 t2 3.62/3.83 0.82/0.72

Item 8 t1 3.26/3.25 0.92/0.86 -1.381/-0.955 0.173/0.349

 t2 3.52/3.50 0.57/0.52

Item 9 t1 3.17/2.69 0.62/0.79 -1.674/-4.423 0.100/0.000

 t2 3.48/3.83 0.83/0.58

Item 10 t1 3.51/3.38 0.70/1.02 -2.362/-2.018 0.021/0.055

 t2 3.93/4.00

**Wpl 2 regular/ZIC**

**n m SD t p**

Item 1 t1 9/15 3.78/3.60 0.83/0.83 0.736/-0.453 0.471/0.649

t2 11/14 3.45/3.71 1.13/0.47

Item 2 t1 3.11/2.67 0.60/0.72 0.609/-1.603 0.537/0.121

t2 2.90/3.14 0.83/0.86

Item 3 t1 3.78/3.13 0.44/0.74 0.808/-1.572 0.401/0.128

 t2 3.55/3.57 0.82/0.76

Item 4 t1 3.00/3.33 0.50/0.72 -1.284/-1.350 0.219/0.189

 t2 3.45/3.64 1.04/0.50

Item 5 t1 3.11/3.00 0.60/0.38 -0.393/-2.220 0.700/0.039

 t2 3.27/3.50 1.19/0.76

Item 6 t1 4.00/4.00 0.87/0.53 0.399/0.299 0.694/0.786

 t2 3.82/3.93 1.17/0.73

Item 7 t1 3.44/3.07 0.73/0.70 -0.260/-4.449 0.980/0.000

 t2 3.45/4.00 1.04/0.39

Item 8 t1 3.22/3.07 0.44/0.70 0.378/-0.492 0.711/0.627

 t2 3.09/3.21 1.04/0.89

Item 9 t1- 3.33/3.06 0.71/0.59 0.070/-1.156 0.945/0.259

 t2 3.36/3.36 1.21/0.74

Item 10 t1 3.44/3.67 0.53/0.49 -2.490/-0.876 0.807/0.390

 t2 3.55/3.86 1.21/0.66

**Wpl 3 regular/ZIC**

**n m SD t p**

Item 1 t1 18/16 3.89/3.50 0.68/0.82 -2.081/-2.179 0.047/0.038

t2 12/14 4.33/4.07 0.49/0.62

Item 2 t1 2.94/2.69 0.94/0.79 -2.008/-2.550 0.055/0.017

t2 3.58/3.29 0.79/0.49

Item 3 t1 3.39/3.38 0.78/0.81 -3.862/-3.108 0.001/0.004

 t2 4.42/4.14 0.67/0.53

Item 4 t1 3.61/3.50 0.70/0.73 -2.130/-2.570 0.042/0.016

 t2 4.08/4.07 0.51/0.47

Item 5 t1 3.56/3.00 0.78/0.89 -1.751/-3.727 0.091/0.001

 t2 4.00/4.00 0.60/0.55

Item 6 t1 4.22/3.88 0.65/0.72 -0.138/-1.167 0.891/0.253

 t2 4.25/4.14 0.45/0.53

Item 7 t1 3.56/3.25 0.86/0.93 -0.961/-2.557 0.345/0.016

 t2 3.83/4.07 0.72/0.83

Item 8 t1 3.28/3.13 0.67/0.72 -1.585/-1.651 0.126/0.110

 t2 3.67/3.57 0.65/0.76

Item 9 t1 3.28/2.94 0.75/0.57 -1.505/-5.981 0.144/0.000

 t2 3.67/4.00 0.65/0.39

Item 10 t1 3.94/3.44 0.64/0.73 -1.533/-2.212 0.137/0.036

 t2 4.25/4.07 0.45/0.83

**Conclusion and discussion**

This study sought to determine whether internships in a care innovation centre contribute more to the development of self-efficacy compared to internships in regular internship environments. The results show a strong increase in self-efficacy among interns doing their internships at a care innovation centre. For eight out of ten GSE items, ZIC interns show significant growth, compared to significant growth for three out of ten items among regular interns. It should be noted here that, at the time the first measurement was conducted, the total group of regular interns achieved a higher average score on the GSE items. They score significantly higher than ZIC interns on four GSE items. At subgroup level, the differences in GSE score in measurement 1 are largest in Wpl 1: regular interns score significantly higher than ZIC interns on four items. In Wpl 2 and 3, regular interns score significantly higher on one item in measurement 1. The results of measurement 2 show the opposite: both for the total group and differentiated according to Wpl 1, 2 and 3, ZIC interns, compared to their regular counterparts, show significant growth for more GSE items. In this study the main focus is on the development of self-efficacy. Although a difference can be seen in GSE scores between both groups in the beginning, the results show that the development of self-efficacy among ZIC interns is stronger. The reduced growth among regular interns can be explained by a ceiling effect. However, measurement 2 scores in this group remain amply below the maximum and therefore this effect does not apply. The strong increase in GSE is an indication that factors within care innovation centres positively contribute to self-efficacy. Some caution should be applied in the interpretation of these results, however, as the intern groups show significant differences between them in terms of internship experience in measurements 1 and 2. The regular interns in Wpl 1 in particular are relatively overrepresented compared to Wpl 1 ZIC interns. It is unclear whether Wpl 2 and 3 interns have completed internships at care innovation centres in the past. Previous internship experiences may distort the results of this study (carry-over effect). In addition, there is a relatively larger dropout among regular Wpl interns. In this group, the difference in GSE score was considerable: regular interns show significant growth for three items, whereas ZIC interns do so for eight items. The limited growth of both regular and ZIC interns in Wpl 2 is remarkable. Regular interns do not show significant growth for any item, with ZIC interns showing growth for two. There is no logical explanation for this.

We can see a significant increase in scores on all GSE items for the total group of interns. Regardless of the learning environment, self-efficacy increases. This effect is to be expected. During internships, the focus is on performing work as part of the work processes (Reenalda, 2011), leading to participation in the workplace routine. This generates a sense of satisfaction and boosts confidence in personal ability.

Examining the contents of the items and the scores achieved (total and at subgroup level), it may be concluded that there is no clear pattern. Based on the results, it cannot be concluded that one group of interns are better problem-solvers or that they have more intervention alternatives available. This probably has to do with the strong internal coherence of the GSE items.

One shortcoming of this study is that the data have been collected anonymously. Consequently, it was not possible to determine the development between measurements 1 and 2 at an individual level, and there are no data on internship dropout rates and/or absence when the measurements were conducted. The availability of these data would likely produce a more detailed picture. Another shortcoming concerns the design of this study. It is unclear whether Wpl 2 and 3 interns performed previous internships in care innovation centres. This variable might affect self-efficacy results. The effect of previous internship experiences on the results cannot be demonstrated now. Selection bias might play a role here, as students could state their preference for an internship. A design in which a group of interns having completed three internship periods within a regular settings is compared to a group of interns having completed three internship periods within a ZIC internship would lead to reduced bias and a less polluted result.

Despite the fact that the groups of interns were not entirely comparable in terms of internship experience, the results do lead to a conservative conclusion that the care innovation centres contain factors that contribute to a stronger development of self-efficacy. Exactly how the sources of self-efficacy relate to a powerful learning environment has not been the focus of this study, and this would require further research. It may be assumed that information sources of self-efficacy are more explicitly present at care innovation centres. There are plenty of opportunities for gaining authentic experiences, supervision is provided, and there is systematic reflection on one’s own performance and that of (fellow) interns.

It may be assumed that the presence of a lecturer at the care innovation centres would contribute positively to the development of self-efficacy among interns. Although this relation has not been explicitly investigated in this study, an effect of direct interaction between lecturer and student is assumed. Lecturers at care innovation centres supervise peer supervision sessions of interns, they coach staff members, and they are actively involved in the design of individual learning processes and the learning climate as a whole. Lecturers are both vocationally and didactically competent. Spouse (2001) sees direct supervision provided by experts as the most powerful factor for the professional development of students. Gruber, Harteis and Rehrl (2008) point out that that processing practical experiences by means of theoretical reflection leads to more meaningful learning. This facilitates the application or transfer of knowledge to other areas of competence. In this study this emerges as a stronger development of self-efficacy.

An important implication of the research results is that self-efficacy as outcome measure contributes to determining the effect of workplace learning within the nursing practice. This complements currently available instruments such as competency descriptions (Gobbens et al., 2007) and checklists for the learning climate (Havekes & Drenth, 2005). Furthermore, this study gives direction to the design of powerful learning environments, particularly where it involves the effective use of the sources of self-efficacy. Explicating these sources is in itself not sufficient, however. As Bandura (1994) correctly notes, (learning) situations should be created in which the chances of success are greater than the risk of failure. This may be understood as an operationalization of the criteria which a powerful learning environment must meet, as set out by Simons (1999).

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