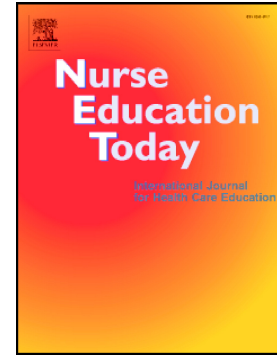


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## **Internationalization at Home Program Significantly Increases the Self-Efficacy of Nursing Students: A Pre-Post Study**

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**Sample CRediT author statement**

**Maria Galan-Lominchar:** Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Resources, Writing – original draft, Writing – review & editing. **Isabel Muñoz-San Roque:** Conceptualization, Formal analysis, Methodology, Supervision, Writing – review & editing. **Cristino del Campo Cazallas:** Conceptualization, Resources, Supervision. **Rochelle Mcalpin:** Resources, Supervision. **David Fernández-Ayuso:** Resources, Validation. **Blanca Egea Zerolo:** Project administration, Writing – review & editing.

## **Internationalization at Home Program Significantly Increases the Self-Efficacy of Nursing Students: A Pre-Post Study**

### **ABSTRACT**

**Background:** Internationalization at home strategies seek to achieve a more inclusive and equitable higher education. Evidence about the impact of these strategies on students' self-efficacy is still scarce, even though this psychological construct is essential for the performance and well-being of nursing students. The Global Nursing Care program was designed to provide nursing students with an internationalization at home experience, combining a virtual exchange and international clinical simulation.

**Aim:** To determine the impact of the Global Nursing Care program on nursing students' self-efficacy.

**Design:** A quasi-experimental, analytic, and longitudinal study was conducted.

**Settings and participants:** The virtual module was carried out online, and the international simulations were developed in the Simulation Centers of the [[REDACTED FOR PEER REVIEW]] and the [[REDACTED FOR PEER REVIEW]]. Seventy students participated in the program and 57 completed the pre-post questionnaire.

**Methods:** Data were collected using an online survey that included a sociodemographic questionnaire and the General Self-efficacy Scale. IBM's SPSS (version 28.0.1.1) was used to analyze data. Differences between self-efficacy levels were measured before and after the program, and according to sociodemographic characteristics.

**Results:** General self-efficacy was significantly augmented following program participation (pre-intervention: mean=32.39, SD=3.87; post-intervention: mean=34.44,

SD=3.86;  $p<.001$ ). No differences based on nationality, previous international academic experience or academic year were found.

**Conclusions:** An internationalization at home program based on virtual exchange and simulation improves nursing students' general self-efficacy. Future research can explore to what extent this effect persists over time.

**Keywords:** Self-efficacy; International Educational Exchange; Nursing Students; Quasi-Experimental Study; Simulation Training.

## Introduction

Internationalization of higher education is present in the strategic planning of universities and in national and international policies (Knight and Wit, 2018), and nursing studies are no exception. Over the last 30 years, internationalization strategies and efforts have been predominantly focused on internationalization abroad, that is to say, on the mobility of students, scholars, and programs across borders (De Wit, 2020). This traditional way of internationalization has a proven impact on nursing students that has been widely documented, mainly focused on cultural competence or similar constructs (Matthews et al., 2021). However, international experiences influence other competencies, skills, personality traits, and attitudes (European Commission, 2019). Nursing students who spend time studying or training abroad benefit from an improvement in critical thinking, communication abilities, confidence to cope with demanding situations, adaptation to unfamiliar environments, personal awareness of social consciousness, the ability to make decisions and solve problems, and self-efficacy (Kelleher, 2013; Ulvund et al., 2023).

The main obstacle to this development is that international mobility programs are only accessible to a small percentage of students. For example, it was recently reported that only 2.4% of 220 million higher-education students are mobile (UNESCO Institute of Statistics, 2023). Financial barriers, a low level of knowledge of foreign languages, separation from family, job obligations, and concerns about family-related responsibilities, are some of the most prominent barriers that stop nursing students from going abroad during their studies (Brown et al., 2016; Kelleher et al., 2016; Kent-Wilkinson et al., 2015). To overcome these obstacles, and since the beginning of the XXI century, a new trend in internationalization has been developed: Internationalization at Home (IAH). It aims to integrate international and intercultural

dimensions into all student curricula (Beelen and Jones, 2015). Strategies based on IAH have numerous benefits on various levels. Indeed, they guarantee the access of all students to internationalization programs and have been shown to be indispensable in crisis situations like the COVID-19 pandemic. Additionally, they favor environmental sustainability (Rumbley, 2020), equity, and accessibility (De Wit and Jones, 2018). Thus, they are encouraged by numerous institutions worldwide, such as the European Parliament (De Wit et al., 2015), the European Higher Education Area (2012), the European Commission (2013), and the American Council on Education (2023).

These strategies have been shown to improve students' global competencies, regardless of their capacity to spend time abroad (Huang et al., 2023). Furthermore, Soria and Troisi (2014) found that students participating in IAH activities may experience a greater development of global competencies than those simply studying abroad.

### ***Virtual Exchange and Simulation***

Virtual exchange has been defined as "technology-enabled, people-to-people education programs sustained over a period of time in which sustained communication and interaction take place between individuals or groups who are geographically separated, with the support of facilitators and/or educators" (European Union and EACEA, 2020, p. 3). Other terms are also used to address this type of program, including Collaborative Online International Learning (COIL) (Jager et al., 2019). The use of this tool has grown exponentially in recent years (O'Dowd, 2021).

In addition, due to the characteristics of the nursing profession, clinical simulation has been widely used to develop competencies in a safe space for both the student and the patient (Koukourikos et al., 2021). According to Gaba (2004, p. 12),

simulation is "an educational technique that replaces or amplifies real experiences with guided experiences that evoke or replicate substantial aspects of the real world in a fully interactive manner." This *replication of substantial aspects of the real world* makes clinical simulation an ideal instrument for internationalization in healthcare disciplines, as some authors have already demonstrated (Chae et al., 2021; Foronda et al., 2018; Marja and Suvi, 2021).

### ***Self-efficacy***

The concept of self-efficacy was coined by Albert Bandura (1977) and is defined as people's judgment of their capabilities to complete a task successfully (Bandura, 1989). According to Bandura (1989), people who doubt their capabilities focus on concerns over personal deficiencies, instead of how best to execute activities, and give up quickly in the face of difficulties. This situation makes them prone to stress, anxiety, and depression (Bandura, 1989). In contrast, people who are sure of their capabilities approach difficult tasks as challenges to be overcome rather than as threats to be avoided; they maintain a strong commitment to them and redouble their efforts in the face of failures. This orientation reduces stress and lowers vulnerability to depression (Bandura, 1989).

Two different positions can be identified in the conceptualization of self-efficacy. Bandura (2012) understands self-efficacy as a specific domain-related construct, while other authors, such as Schwarzer (2014) and Sherer et al. (1982), posit that various experiences of failure and success in different domains may create generalized beliefs of self-efficacy. Thus, general self-efficacy refers to a broad and stable sense of personal competence to deal effectively with a variety of stressful situations (Schwarzer and Warner, 2013).



Evidence shows that self-efficacy plays a key role in the well-being and performance of nurses and nursing students. Nway et al. (2023) and Demir et al. (2022) suggested that self-efficacy negatively correlates with nursing students' depressive tendencies. Additionally, higher self-efficacy is associated with lower burnout in nursing students (Lopes and Nihei, 2020) and nurses (Consiglio et al., 2014), and higher levels of care for nurse-patient interactions (Eren and Turkmen, 2020). It also has a mediating effect between professional identity and competence among nursing students (Mohamadirizi et al., 2015; Yao et al., 2021), and has been shown to be positively correlated with self-esteem in nursing professionals (Pérez-Fuentes et al., 2019) and general health (Dadipoor et al., 2021). In this sense, self-efficacy must be a key aspect to consider in nursing education.

Traditional mobility programs have shown an impact on the general self-efficacy of students (Nguyen et al., 2018; Petersdotter et al., 2017), which may last several years after the international experience (Nada and Legutko, 2022). However, some authors suggest that studying abroad does not guarantee this improvement (Emirza et al., 2021).

Although the main objective of IAH is the acquisition of intercultural and international competencies, it is logical to think that engaging students in these kinds of activities can also provide supplementary benefits. Thus, this study aimed to determine the impact of an IAH program on the general self-efficacy of nursing students.

## **Methods**

### ***Intervention: The Global Nursing Care Program***

The Global Nursing Care (GNC) program is a mixed-method IAH program that combines two modules: a virtual exchange and an international simulation. It is based on a constructivist, collaborative, and experiential learning approach, and its main

objective is to develop nursing students' intercultural and international competencies. It was created and implemented by a team composed of faculty members from [[REDACTED FOR PEER REVIEW]] and [[REDACTED FOR PEER REVIEW]] University (USA), in March and October 2022. The virtual module was carried out online, and the international simulation took place in the simulation centers of both institutions.

A nursing professor with experience in virtual collaborative programs and clinical simulation facilitated both modules. The choice of methodologies aimed to provide the students with an activity that replicates an international exchange as much as possible. The virtual exchange, designed following the premises of the Collaborative Online International Learning (COIL) approach developed by The State University of New York (SUNY Commons, 2021), allows the students to interact with colleagues from other cultures, create new relationships, work collaboratively, acquire knowledge about different cultures, develop skills to solve intercultural conflicts, and understand different healthcare systems and the role of nurses in them. Teams with students from both countries were created to participate in synchronous and asynchronous activities for five weeks. The international simulation allows them to apply what they have learned in the virtual module and to experience working as a nurse in a foreign country as realistically as possible. It was designed following the Healthcare Simulation Standards of Best Practice of the International Nursing Association for Clinical Simulation and Learning (Watts et al., 2021). The activity consisted of three consecutive scenarios performed in a simulation center that replicated an outpatient setting in a foreign country (a US hospital for Spanish students and a Spanish hospital for US students). Each student participated in the session individually. The simulation modality included patients/persons with native/high proficiency language skills. The

simulation lab was set up to provide maximum fidelity and realism, not only in the clinical aspects but also in considering cultural and operational differences between clinical settings in both countries. After each debriefing, the student was offered a chance to repeat the previous scenario if needed. An outline of the program is presented in the supplementary material (supplementary Table S1).

The achievement of the intended learning outcomes was assessed by two different team members. These members evaluated the students' work and activities, their participation in social events, and their performance in the simulated scenarios with a checklist and a rubric created explicitly for the program.

Despite the intention of making the program mandatory for all students, the rigidity of the curricula of both institutions prevented it from being embedded in them, and the students joined the program voluntarily. Since Spanish students were obligatorily enrolled in an English language course during their nursing studies, English was the language selected as the lingua franca for the virtual exchange, and at least an intermediate – upper intermediate level was necessary for Spanish students to join the GNC program. The international simulation was performed in English by the Spanish students and in Spanish by the US students. No language requirement was set for the US students, and their Spanish language skills varied from elemental to native speaker. During the scenarios, they were allowed to use any resource they deemed necessary to understand and express themselves properly.

### ***Study design and participants***

A quasi-experimental study was designed. Convenience sampling was adopted for subject recruitment. Seventy undergraduate nursing students participated in the GNC program (GNC students), 47 in Spain and 23 in the USA, from a total of 860 nursing

students (450 in Spain and 410 in the USA). The survey was given to all participants, and it was completed by 57 students (81.42%).

### ***Data collection and procedure***

The faculty asked the students in person to voluntarily complete an online survey that included the measurement tools. The GNC students answered the survey before (pre) and after (post) the program.

### ***Measures***

The data collection instrument included a sociodemographic questionnaire and the Generalized Self-Efficacy Scale. Sociodemographic data included gender, nationality, year of studies, and previous participation in international academic experiences; these were collected only as a baseline.

The Generalized Self-Efficacy Scale is a unidimensional 10-item scale created by Jerusalem and Schwarzer (1992) that "assesses the strength of an individual's belief in his/her ability to respond to novel or difficult situations and to deal with any associated obstacles or setbacks" (Schwarzer and Jerusalem, 1995, p. 35). It showed high reliability in diverse studies, with Cronbach's alpha between 0.82 and 0.93 (Schwarzer and Jerusalem, 1995). It has been culturally adapted and validated across 25 nations (Scholz et al., 2002). The Spanish version, adapted by Baessler and Schwarzer (1996), and with a Cronbach's alpha of 0.81, was administered to the Spanish students. Responses were made on a 4-point scale, from "Not at all true" to "Exactly true", and the final composite score was calculated by summing up the responses with a range from 10 to 40. The scale showed high reliability in our sample, with Cronbach's alpha values of 0.84 and 0.87 in the pre- and post-test, respectively.

### ***Data analysis***

IBM's SPSS (version 28.0.1.1) was used to analyze data. The GNC group's pre-test and post-test data were compared using a paired sample t-test. Independent t-tests and an ANOVA test were conducted to compare differences between self-efficacy levels according to sociodemographic data. The variance homogeneity assumption was analyzed using Levene's test, and the normality assumption was analyzed using Shapiro-Wilk's test. The alpha level for statistical significance was set at 0.05 (two-sided significance test). The effect size was determined by calculating Cohen's  $d$  for small (0.2), medium (0.5), and large effects (0.8), or Eta squared for small (0.01), medium (0.06), and large effects (0.14) (Cohen, 1992).

### ***Ethical considerations***

The study was reviewed and approved by the Ethics Committee at the [[REDACTED FOR PEER REVIEW]] (determination 2022/1). Student participation in the program was fully voluntary and had no impact on their grades. In the virtual module, students were advised about potential triggers related to cultural issues, and they were encouraged to talk to the facilitator if they were experiencing emotional discomfort to ensure student psychological safety. In the international simulation scenarios, a safe space was created in the pre-briefing, and emotional support was offered to students if needed after each debriefing. Informed consent was obtained at each data collection point. Responses were voluntary and anonymous at all data collection and analysis stages, with before and after responses linked using a unique identifier generated by each respondent.

## Results

### *Participant characteristics*

Sociodemographic data are shown in Table 1. Most students were female (96.5%). Students were enrolled in one of the four academic years. Regarding previous international academic experience, the rate of students who had participated in an academic period abroad at any stage of their pre-university education was 40.4%.

### *General self-efficacy*

The program's impact on self-efficacy is presented in Table 2. After the GNC program, there was a significant increase in the students' total self-efficacy ( $p < 0.001$ ), with pre- and post-test scores of  $32.39 \pm 3.87$  and  $34.44 \pm 3.86$  (mean  $\pm$  standard deviation), respectively.

An exploratory analysis was conducted to determine the relationship between sociodemographic and self-efficacy levels, except for gender, due to the very small number of male participants. The means in terms of nationality were higher in the American group in the pre-test ( $32.69 \pm 4.99$ ) than in the Spanish group ( $32.27 \pm 3.38$ ), as well as in the post-test ( $35.25 \pm 3.38$  in the American group versus  $34.12 \pm 4.04$  in the Spanish group). Total self-efficacy scores according to previous international experience were higher in both the pre-test ( $32.56 \pm 4.07$ ) and the post-test ( $35.00 \pm 3.86$ ) for the group with no international academic experiences, compared to the group of students who had previously participated in international academic experiences (pre-test:  $32.13 \pm 3.58$ ; post-test:  $33.61 \pm 3.82$ ). However, no significant differences were found in any case (Table 3). Then, an ANOVA test was conducted to compare differences in self-efficacy levels according to the year of studies (Table 4). The highest means were found in the post-test scores of 2nd-year students ( $35.19 \pm 3.95$ ), while the

lowest means were in the pre-test scores of 3rd-year students ( $31.00 \pm 3.94$ ). Variance homogeneity assumption was met (pre-test: Levene  $F=1.24$  and  $p>0.05$ ; post-test: Levene  $F=0.07$  and  $p>0.05$ ), as well as normality assumption according to Shapiro-Wilk's test (pre-test and post-test  $>0.05$ ). Again, no significant statistical difference was found among students from different academic years.

## Discussion

Our study suggests that an IAH program may significantly increase students' perception of general self-efficacy. No previous studies have been conducted using this combination of educational methods, but our research confirms results from studies that addressed each methodology separately. Some authors found that virtual exchange may impact different types of domain-specific self-efficacy (Naicker et al., 2022; Romero-Rodríguez et al., 2023) and general self-efficacy (Van Der Velden et al., 2016), but no studies related to general self-efficacy and the use of this methodology with nursing students were found.

The use of clinical simulation to enhance the general self-efficacy of nursing students is well-known (Abusubhiah et al., 2023; Al Gharibi et al., 2021; Li et al., 2019; Ruiz-Fernández et al., 2022). However, we found that these studies, focused on measuring the relationship between general self-efficacy and nursing simulation, did not include any intercultural or international component in the simulation scenario. In contrast, studies including scenarios that involved either interaction with a patient from a different cultural background (Chae et al., 2021; Marja and Suvi, 2021), or the use of a second language (Boruff, 2020; Karaçay et al., 2022; Whited et al., 2023), showed the development of domain-specific self-efficacy, such as cultural or communicative self-efficacy.

According to Bandura (1977), the experience of overcoming which arises from effective performance is the main source of self-efficacy. The present study shows that allowing students to experience an international and intercultural exchange, even without real immersion in a foreign country, and providing them with the opportunity to apply the knowledge, skills, and attitudes they have acquired in a simulated global environment, increases their general sense of competence. Students translate the success they experience in the GNC program into a greater confidence of being able to cope with a broad range of challenges.

Our results suggest that student nationality has no relation to the levels of self-efficacy on the baseline. According to Pearl et al. (2023), a learner's culture may influence their perception of self-efficacy when interacting with people from different cultures, due to different levels of tolerance of ambiguity associated with different cultures. However, these differences have been found mainly between individualist and collectivist cultures (Scholz et al., 2002), and we can consider both the US and the Spanish cultures as Western cultures with more individualist than collectivist traits. This may explain the similarity in the self-efficacy levels.

We also found that previous academic international experiences do not influence general self-efficacy levels. Remarkably, this finding contradicts the studies that suggest that an international academic experience leads to a higher perception of self-efficacy (Cubillos and Ilvento, 2012; Emirza et al., 2021; Nada and Legutko, 2022). This discrepancy may indicate that the rise in self-efficacy detected in those studies does not last long. This may also occur in the improvement of self-efficacy measured in this study and further research is needed to clarify this.

Similarly, we did not find a significant difference in the levels of self-efficacy between students of different years. This finding is not consistent with the results of



Dogu et al. (2022), who found that senior nursing students had a higher perceived self-efficacy than second and third-year students. Nor are they consistent with those of Chen et al (2019), who showed that, conversely, self-efficacy decreased as the year of studies increased. Nursing students are expected to demonstrate self-efficacy levels that are consistent with their professional development (American Association of Colleges of Nursing, 2021), so it may be of concern that our data shows no better levels of self-efficacy in senior students than in previous academic years. This may mean that more attention should be given to improving self-efficacy in nursing students and not simply take it for granted that students will naturally develop it throughout their studies.

Research shows that higher general self-efficacy brings great benefits for the well-being of nurses and nursing students (Dadipoor et al., 2021; Nway et al., 2023; Pérez-Fuentes et al., 2019; Yao et al., 2021), as well as for their clinical competence (Yao et al., 2021; Yu et al., 2021). Thus, we can state that implementing this kind of program may benefit nursing students beyond the already-known acquisition of intercultural and international competencies.

### **Limitations**

This study has several limitations. The small sample size results from the impossibility of embedding the program in the formal curricula of universities. The even smaller sample size of US students may be caused by a lower foreign language learning motivation, which is one of the key factors that determines the participation of nursing students in IAH programs (Wong et al., 2023). The small number of male participants made it impossible to analyze the data according to gender. All data were collected by self-reporting immediately after program completion, which could lead to potential bias. Thus, no information was available on the extent to which self-efficacy is

improved in relation to each module or how the impact shown in this study persists over time.

## **Conclusions**

An educational program that combines virtual exchange and clinical simulation is associated with a statistically significant increase in the general self-efficacy of nursing students, measured just after the completion of the program. This combination of collaborative and experiential learning with an international perspective has been shown to improve the sense of personal competence that allows nursing students to face stressful situations, which can be expected to arise in their daily work in healthcare settings. In addition to this work-related benefit, the relationship between self-efficacy and well-being suggests that this improvement may positively impact their psychological well-being as well, which is an added value.

Although the primary purpose of the IAH is the achievement of international and intercultural competencies for all students, the study found that this program positively influences the general self-efficacy of participants, an aspect that should not be overlooked. If, in addition to providing quality healthcare in increasingly diverse societies, and facilitating the integration of nursing professionals in multicultural work teams, we can also provide students with better tools to deal with the challenges faced in their personal and professional lives, the benefits will be even greater. It is our responsibility as educators to make these benefits accessible to all, and IAH has been shown to be effective in achieving this end. Further research, however, is needed to explore to what extent this improvement persists over time.

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**Table 1***Sociodemographic data*

	GNC students ( <i>n</i> = 57)	
	%	<i>n</i>
Gender		
Female	96.5	55
Male	3.5	2
Year of studies		
1 <sup>st</sup>	17.5	10
2 <sup>nd</sup>	28.1	16
3 <sup>rd</sup>	22.8	13
4 <sup>th</sup>	31.6	18
Nationality		
Spanish	71.9	41
American	28.1	16
Previous international academic experience		
Yes	40.4	23
No	59.6	34

**Table 2***Pre- and post-test comparison of general self-efficacy in GNC students*

	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	Cohen's <i>d</i>	
Total self- efficacy <i>n</i> = 57	Pre-test	32.39	3.87	4.44	<.001	0.53
	Post-test	34.44	3.86			

*M* = mean; *SD* = standard deviation.

**Table 3**

*General self-efficacy in GNC students relating to nationality and previous international experience*

		Nationality							
		Spanish <i>n</i> = 41		American <i>n</i> = 16					
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	Cohen's <i>d</i>	
Total self-efficacy	Pre-test	32.27	3.38	32.69	4.99	0.37	.716	0.09	
	Post-test	34.12	4.04	35.25	3.38	0.99	.238	0.30	

		Previous international experience							
		Yes <i>n</i> = 23		No <i>n</i> = 34					
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	Cohen's <i>d</i>	
Total self-efficacy	Pre-test	32.13	3.58	32.56	4.07	0.41	.685	0.111	
	Post-test	33.61	3.82	35.00	3.86	1.34	.186	0.36	

*M* = mean; *SD* = standard deviation

**Table 4**

*General self-efficacy in GNC students in relation to the year of studies*

		Year of studies										
		1 <sup>st</sup> <i>n</i> = 10		2 <sup>nd</sup> <i>n</i> = 16		3 <sup>rd</sup> <i>n</i> = 13		4 <sup>th</sup> <i>n</i> = 18				
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i> ratio	<i>p</i>	$\eta^2$
Total self-efficacy	Pre-test	32.40	3.78	32.50	4.60	31.00	3.94	33.28	3.10	0.88	.458	.05
	Post-test	35.10	3.75	35.19	3.95	32.77	3.94	34.61	3.77	1.12	.349	.06

*M* = mean; *SD* = standard deviation

### **Declaration of interests**

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### **Highlights**

- Virtual exchange and simulation are useful for internationalization in nursing.
- A combination of simulation and virtual exchange improves general self-efficacy.
- Students in the program show higher self-efficacy after the intervention.
- This program impacts nursing students beyond intercultural competence.