

The Global Case Study Challenge: A Virtual Exchange Developing Global Work Competencies

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Abstract: The Global Case Study Challenge (GCSC) is a virtual exchange program designed for Bachelor and Master level students from interdisciplinary programs. The program focuses on the development of key Global Work (GloW) competencies, defined as: intercultural, digital communication and sustainability competencies. This paper discusses how the GCSC, as a new virtual model of teaching and learning, in a real-world context, supports the development of future-oriented work competencies. These competencies are crucial for effective global virtual teamwork and New Work scenarios in remote contexts. To date, 1450 students and 50 educators from 30 universities across 20 different countries have worked together in some 380 Global Virtual Teams on real-life business cases. The learning design of this virtual exchange project is rooted in the knowledge that future-oriented global work competencies such as intercultural competence, digital communication competence and sustainability competence can only be developed through transformative learner-centred experiential learning. In the 2021 iteration of the GCSC, over the 8-weeks of the program, 86 groups of interdisciplinary Global Virtual Teams (GVTs) worked together: Establishing team-building dynamics while working in self-directed GVTs of 5-7 students, reflecting on (corporate) sustainability, collaborating on real-life business cases, and presenting their solutions and recommendations to a major global corporate partner at a virtual conference. The impact of the program on students' competency development was measured using a longitudinal study design. The intercultural, digital communication, and sustainability competencies of the participants were measured pre-exchange (n=263) and post-exchange (n=274). The findings demonstrate a consistent increase of competencies over time among the program participants in almost all categories (knowledge, skills, attitudes), providing clear evidence of the overall positive impact of the GCSC on participants' competency development over the two-month program. Ultimately, the GCSC contributes towards students becoming highly effective members and leaders of high-performing Global Virtual Teams.

Keywords: virtual exchange, e-learning design, collaborative e-learning, future work competencies, experiential virtual learning environment, internationalization

1. Background

The GCSC represents an innovative and high-impact career-oriented teaching and learning virtual exchange (VE) project, which provides educators and students with first-hand intercultural and international experience. The Global Case Study Challenge (GCSC) is a multidimensional VE incorporating both professional development for educators and learning and competency development for students. The 2021 iteration was a collaboration of 18 universities from across the globe - from Austria, Spain, to Japan, Russia, Malaysia and Chile - with the specific aim of enhancing Global Work (GloW) competencies: digital communication, intercultural and sustainability competencies. The program has grown exponentially since its first iteration, in 2018, when 3 universities from Austria and Chile took part with a total of 90 students. By its fourth iteration in 2021, a total of 1450 students and 50 educators from 30 universities across 20 different countries have participated in 380 Global Virtual Teams (GVTs). Collaborating as an intercultural, interdisciplinary, virtual team itself, the GCSC management team draws on extensive research, teaching and training expertise in: International Education; Virtual Exchange (VE)/Cooperative Online International Learning (COIL); Intercultural Management; Corporate Sustainability; Project Management; New Work; International HRM; as well as inspirational events design and management (Covarrubias-Venegas et al., 2021).

The GCSC, as a virtual exchange, has been developed in alignment with national and international HEI strategies, and provides a specific methodology for the internationalization of curricula, helping to further in particular Internationalization at Home (IaH) and virtual mobility strategies. IAHE and the internationalization of university curricula have been receiving significant attention recently at higher education institutes (Rubin, 2017). Online international activities are promoted by many institutions as an important means of IaH and increasingly also as

part of responsible internationalization, as universities strive to find ways to foster student and staff exchanges and international experiences when physical mobility is not possible or desirable. Rubin (2017) suggests that student mobility reaches less than 10% of students in the US and Western Europe, while for the rest of the world the figure is closer to 1% (p.31). These figures are likely to have increased following the COVID-pandemic, but nonetheless provide a clear indication of the need for an increased drive towards virtual mobility as a means of increasing international collaboration. Virtual exchange programs are considered to make a valuable contribution to international, national, and institutional agendas for more accessible and inclusive forms of learning for all students. The GCSC has been purposefully designed as a sustainable form of VE, contributing to responsible internationalization. This is particularly important in times where internationalization and cross-border mobility are considered as only accessible to those individuals who can afford it. This global virtual cooperation format is intentionally equitable and accessible to those individuals unable to go on exchange. As such, the GCSC makes international, intercultural, and interdisciplinary experiences possible for those who have a personal, financial, or family situation that hinders physical mobility. As a VE/COIL initiative, the GCSC provides invaluable opportunities for intercultural and interdisciplinary exchange, the forging of new global connections through technology-mediated interaction, and life-enriching authentic international experiences that enhance student engagement (Buko et al., 2021).

The compact and career-oriented design of the GCSC means that it is adaptable across disciplines and departments and can be used as an independent virtual exchange program or as an integrated part of a course or module as with Global Networked Learning (GNL). While traditional COIL projects involve co-developing and co-teaching complete for-credit courses, the GCSC can also be incorporated as a collaborative component for just one part of a course or module or can be run as a stand-alone elective course. This can help educational partner institutions design individual curriculum and learning outcomes, making GCSC outcomes more responsive to the future of work. Individual meetings are held with educators and institutional representatives in advance of participation in the GCSC to insure interoperability between the GCSC and the participating educational contexts.

This paper refers specifically to the fourth iteration of the GCSC in 2021, in which a sustainability focus was added as the third key component of the Global Work competencies model, in addition to intercultural communication competencies and digital competencies. The authors of this paper hold that sustainability thinking should be considered as a key future-oriented global work competency. The GCSC program aims for both students and educators to increase their knowledge and awareness of sustainability in general and specifically in the corporate context. The project-based learning design revolves around five real business case studies which students work on. In the 2021 iteration, the cases were written in collaboration with a global corporate partner about five different aspects of a major international Merger and Acquisition (M&A) involving a Spanish and Japanese multinational. This paper discusses the Global Case Study Challenge as a highly effective virtual exchange for developing much sought-after global work competencies.

2. Global Work (GloW) competencies

Today's post-pandemic context, with a vastly increased number of people working remotely in virtual teams and virtual contexts, means that a new set of competencies are needed, tailored specifically to the context of the virtual workspace. As a result of fast-changing and uncertain work environments, companies are re-envisioning their workplaces and processes in response to new challenges and opportunities.

2.1 Flexibility and virtuality in New Work environments

The increase in virtual work environments means that teams can work more flexibly and, by traveling less, are also becoming greener (Olaisen and Revang, 2017). Most working environments involve some degree of virtuality and collaboration. Graduates entering the labour market are thus finding increased work opportunities in remote or partly remote (hybrid) work contexts with highly diverse teams. These new 'worksapaces' are becoming increasingly culturally complex and ubiquitous work settings, shaped by global and local forces and tensions. Gibson and Grushina (2021), for example, have noted the need for new strategies that "address nuances of global teamwork, intricate dynamic needs of team members, and deep-seated assumptions and their associated challenges, such as intercultural conflicts and difficulties managing technology preferences" (p.1). These new strategies include identity-building, cultural-bridging, conflict management and being able to establish an effective set of technological repertoires.

Higher Educational Institutions (HEIs) are responsible for fostering students' learning to develop the skills and competencies they need to effectively contribute to both the future of work and the future of humanity. These competencies urgently need to be re-evaluated and realigned with New Work scenarios and the reality of working in partly or fully virtual contexts. This includes helping students develop competencies relating to self-awareness, intercultural communication and specifically the intercultural dynamics of virtual teams, conflict management, digital communication competencies, as well as an ability to effectively align technological preferences and create technological repertoires for virtual teamwork.

2.2 Role of HEI in competency development for virtual teamwork

As global virtual teamwork and remote work are on the rise, and were even before the COVID-19 pandemic, HEIs are required to provide the framework for graduates to effectively perform in fully virtual or partly virtual environments. Today, most people are not sufficiently prepared for work in virtual environments (Kolm et al, 2021). Nandigama (2021), suggests that virtual teams as part of international online collaborations (IOCs) show a trend of participants lacking the competencies to fully participate in IOCs. Much literature on virtual teams in a work context continues to suggest that cultural and temporal misunderstandings are commonplace and a result of the geographical dispersion of teams. (Shen, Lyytinen, and Yoo, 2015; Tenzer, Pudelko, and Harzing, 2014; and Muszyńska, 2021). This makes working effectively in virtual teams a significant challenge. While many students are technologically competent, particularly digital natives, there are several studies that indicate that they do not have the competencies necessary for effective virtual collaboration (Clearly et al., 2019). This points to digital natives having basic office and email skills, social media and internet use but lacking the competencies to apply these effectively in virtual teamwork settings. The virtual context is increasingly culturally and contextually complex and poses additional challenges relating to communication, use of technology, leadership, project management and cultural dynamics (Clearly et al., 2019).

HEIs urgently need to re-think and re-design their teaching, learning and research environments to equip students with critical Global Work (GloW) competencies. The authors of this paper, as learning architects of the Global Case Study Challenge, define core Global Work competencies as: intercultural competency, digital communication competency and sustainability competency. These are understood as a set of future-oriented transversal competencies, essential to the future of work but also the future of international collaboration.

2.3 Virtual exchange as a platform for honing New Work competencies

VE/COIL programs often explicitly aim to develop intercultural competencies, and some focus on International Online Collaboration Competencies (IOCC). Kolm et al. (2021), based on a literature review of some 516 studies, found only 14 empirical studies providing evidence for IOCC development in Higher Education and identified six key competency domains of IOCCs: 1. ICT; 2. Intercultural and cultural; 3. Communication and language; 4. Self-management and organization; 5. Collaboration; and 6. Domain-specific (depending on the profession or learning domain, such as collaborative learning using a wiki). The IOCC competencies listed here are all embedded in the Global Case Study Challenge design. IOCC competencies are not as comprehensive as the GloW competencies proposed by the GCSC global work competency model. Sustainability thinking, and the development of sustainability competency is left completely out of the IOCC mix. The authors of this paper argue that to develop holistic, future and career-oriented global work competencies, sustainability competency must be a key part of the mix. It should be considered a crucial part of a mindset and skillset for global citizenship as well as for innovative and anti-fragile New Work environments. Sustainability competency, for example, can help foster global fairness in the digital space, recognizing and honouring diversity in an equitable manner, fostering international inclusion. While online communication environments are not inherently inclusive spaces because of varied digital literacies, different communicative abilities, etc., conscious effort is made in the GCSC to mitigate these digital inequalities by engaging participants in discussion about these differences and at the same time helping students develop competencies to avoid digital marginalization, becoming more inclusive and intentional in their digital communication; and shift thinking away from the notion of being passive consumers to becoming more active members of online (learning) communities.

2.4 GloW competency model

The GCSC GloW model is based on three central competency areas: intercultural communication (and collaboration), digital communication, and sustainability (corporate and personal) competency. In enhancing the competencies of global educators and students in these three areas the GCSC is creating a movement of Global,

Conscious and Sustainable Communities (also abbreviates as GCSC). Global virtual communication is partly taken for granted in today's international business world, and it is rarely integrated into educational programs. In developing intercultural competency, students ideally enhance their self-awareness; perspective-taking; intercultural awareness and knowledge; self-directed learning in groups; self- and team organization; conflict management, communication and cooperation skills. In keeping with the principles of Education for Sustainable Development (ESD), the GCSC aims to help students acquire key competencies necessary for transformative sustainable learning. These competencies serve to strengthen sustainable personal and corporate responsibility and include complex problem-solving skills; critical/networked thinking and communication; systems thinking; and diversity, equity and inclusion in digital contexts. Digitalization of the working world is no longer just an abstract vision of the future, but a trend towards new remote 'workscapes' and (partial or complete) distance working. The GCSC focuses on developing digital communication skills including exploration and use of file-sharing tools and/or other cloud-working communication and collaboration tools, communication and facilitation skills in a virtual context (hosting and presenting skills), leading GVTs, e-conferencing know-how, as well as digital literacy and the impact of digital technology on communication within teams.

While research into language learning in a virtual environment is relatively comprehensive, research into non language related competency development in online settings remains fragmented. Kolm et al. (2021) in their systematic review of empirical studies on International Online Collaborative Competencies concluded that "(m)ethods to teach and evaluate IOCCs acquisition are underdeveloped but urgently needed" (p.183). This paper aims to position the Global Case Study Challenge as an effective and evidence-based method of competency development for HEI students, enhancing not only IOCCs but also more future-oriented and comprehensive global work (GloW) competencies – intercultural, digital communication and sustainability competencies.

3. GCSC learning architecture

The instructional design of the Global case study Challenge relies on a data driven approach. Over four iterations, qualitative and quantitative data has been collected to test whether the GCSC learning experience contributes to the development of the three core competences promoted by the program. The program relies on both online (synchronous and asynchronous) and offline learning approaches, creating a very hands-on experiential learning environment for all involved. The heterogeneity of the student groups and faculty groups is shown to be particularly important, supporting intercultural and interdisciplinary learning and teaching. This makes the topic of intercultural and global cooperation authentic and tangible, as well as work in interdisciplinary GVTs. The GCSC didactical concept and learning architecture leans on several frameworks in addition to IaH, including Virtual Exchange (VE)/Cooperative Online International Learning (COIL) and Globally Networked Learning (GNL); Project-Based Learning (PBL) through real-life case studies; and Kolbs Learning Cycle (Kolb, D. A. (2015)).

3.1 GCSC as a form of accessible internationalization

Internationalization and cross-border mobility are often considered as elitist and reserved for those individuals who can afford it, while projects such as the GCSC offer institutions and individual students, who otherwise easily disengage from internationalization activities, an opportunity to participate in an IaH initiatives. As a VE/COIL initiative, the GCSC provides invaluable opportunities for intercultural and interdisciplinary exchange, the forging of new global connections, and life-enriching authentic international experiences that enhance student engagement. VE/COIL as a methodology for internationalization of the curriculum helps to develop global mindsets and create intercultural encounters that can contribute to transformative learning. The GCSC embodies the prominent values of VE/COIL practice: critical consciousness, collaboration, equity, and inclusion, which can contribute to closing a global learning gap.

3.2 GCSC promoting project-based learning

The didactical design of the GCSC is strongly student-centred, based on the "experience-based learning" approach according to the model of Kolb (1984), which represents a cyclical experience, observation and reflection, abstract conceptualization, and active experimentation. Learning is as a holistic process of experience, thinking and behaviour, where knowledge is created through the transformation of experience in the virtual and cultural interaction situation. The Project-Based Learning (PBL) component of the GCSC, in which students learn by actively engaging in real world and personally meaningful tasks (Boss, S. and Larmer, J. 2018), revolves around a series of five business cases based on the ongoing integration and re-branding process of a

major Merger and Acquisition involving a Spanish and Japanese multinational. These real-life business cases, focus on corporate social responsibility, change management, corporate communication and merging organizational cultures, learning and development, and HRM and new work. The case studies develop problem-solving skills on the one hand, but also the ability to tackle complex new work and business-related challenges on the other. Working together with a corporate partner has proven a means of forging valuable global connections and has contributed to students' global learning and digital global readiness. Students analyse the cases, develop solutions and recommendations, and then present these for the corporate partner at a global virtual conference. In applying this virtual approach to project-based learning, the GCSC helps cultivate the right mindsets to foster key future employment competencies. Reflection and learning transfer are enhanced by a post-conference live de-briefing session with international managers of GVTs. Here students can reflect on their own personal experiences and learnings, re-think these in the context of real virtual work environments and consider how to transfer their learning to the professional context.

4. Competency development: Evaluation methodology

To measure the development of the global work competencies presented here, a longitudinal study (analysing change over the 8-week period) was conducted with three quantitative instruments, measuring competencies before and after virtual exchange with all participants.

The research instruments used for the quantitative longitudinal study included an intercultural questionnaire, a digital communication questionnaire and a sustainability questionnaire. The surveying of students was conducted via the Moodle learning management system pre and post Global Case Study Challenge. Students were asked to complete the survey upon entering Moodle for the first time and were then asked to complete the same survey again at the end of the 8-week program. 263 students completed the pre-exchange survey and 274 completed it post-exchange. All three scales use a six-point Likert scale. The Intercultural Survey used was the A.S.K.S. Intercultural Knowledge and Competence survey (developed by Holgate et. al, Purdue University¹). This is a self-assessment survey based on students' attitudes, skills, and knowledge in relation to appropriate and effective intercultural communication. The scale includes 14 items (4 relating to attitude – openness and curiosity; 4 relating to skills – communication and empathy; 6 relating to knowledge – world view and self-awareness). The digital communication competencies scale was self-developed, as no appropriate instrument was found, included 14 items (5 relating to attitude – curiosity and openness; 6 relating to skill – design and creation, use of digital formats, digital literacy and digital communication; and 3 relating to knowledge – design and creation, digital literacy and digital communication). The sustainability competencies scale was also self-developed and included a total of 14 items (6 relating to knowledge – SDGs, SDGs and environment, SDGs and education, SDGs and lifestyle and SDGs and business; 4 relating to attitude – sustainability and education, SDG and business, SDG and environment, SDG and education; and 4 relating to skill (sustainable lifestyle, SDG and environment. Researchers applied Cronbach's alpha to assess the reliability of the three selected instruments. Cronbach' α was applied for each instrument individually for pre and post data.

5. Findings

In 2021, a longitudinal study of international student participants with pre-exchange (N263) and post-exchange (N274) was conducted using three surveys with 14 questions in each survey and using 6-point Likert scale. Quantitative data for the longitudinal study was collected with the help of intercultural survey (VALUE rubric: Attitudes, Skills, and Knowledge), digital communication competency survey (self-developed), sustainability competency survey (self-developed). In the digital competencies scale and sustainability scale the results indicate a steady and consistent shift over the 2-month period in every category (Knowledge, Skills, Attitudes) from the pre-training ratings in low (1-2)-medium (3-4) range to the post-training in the medium (3-4)-high range (5-6). A slight increase in the knowledge category of Intercultural Competence development was observed, with no significant change in the category of attitudes and skills. This research demonstrates a consistent increase of competencies over time among all the program participants, providing clear evidence of the overall positive impact of the GCSC on participants' intercultural, digital, and sustainability competency development over the two-month program.

¹ adapted from the AAC&U Value Rubric: <https://www.aacu.org/value/rubrics/intercultural-knowledge> Developers: Holgate, H. A., Calahan, C. A., and Parker, H.E.

Table 1: Intercultural competencies

Intercultural: Attitudes Pre and Post									
	Frequency	Percent	Valid %	Accumulated Percentage		Frequency	Percent	Valid %	Accumulated Percentage
LOW	1	.4	.4	.4	LOW	2	.7	.7	.7
MEDIUM	82	31.2	31.2	31.6	MEDIUM	56	20.4	20.4	21.2
HIGH	180	68.4	68.4	100.0	HIGH	216	78.8	78.8	100.0
Total	263	100.0	100.0		Total	274	100.0	100.0	
Intercultural: Knowledge Pre and Post									
	Frequency	Percent	Valid %	Accumulated Percentage		Frequency	Percent age	Valid %	Accumulated Percentage
LOW	0	0	0	0	LOW	2	.7	.7	.7
MEDIUM	60	22.8	22.8	22.8	MEDIUM	48	17.5	17.5	18.2
HIGH	203	77.2	77.2	100.0	HIGH	224	81.8	81.8	100.0
Total	263	100.0	100.0		Total	274	100.0	100.0	
Intercultural: Skills Pre and Post									
	Frequency	Percent	Valid %	Accumulated Percent		Frequency	Percent	Valid %	Accumulated Percentage
LOW	0	0	0	0	LOW	2	.7	.7	.7
MEDIUM	42	16.0	16.0	16.0	MEDIUM	34	12.4	12.4	13.1
HIGH	221	84.0	84.0	100.0	HIGH	238	86.9	86.9	100.0
Total	263	100.0	100.0		Total	274	100.0	100.0	

Table 2: Digital competencies

Digital: Skills Pre and Post									
	Frequency	Percent	Percentage Valid	Accumulated		Frequency	Percent	Percentage Valid	Accumulated
LOW	5	1.9	1.9	1.9	LOW	1	.4	.4	.4
MEDIUM	97	36.9	36.9	38.8	MEDIUM	63	23.0	23.0	23.4
HIGH	161	61.2	61.2	100.0	HIGH	210	76.6	76.6	100.0
Total	263	100.0	100.0		Total	274	100.0	100.0	
Digital: Knowledge Pre and Post									
	Frequency	Percentage	Percentage Valid	Accumulated		Frequency	Percentage	Percentage Valid	Accumulated
LOW	3	1.1	1.1	1.1	LOW	1	.4	.4	.4
MEDIUM	83	31.6	31.6	32.7	MEDIUM	51	18.6	18.6	19.0
HIGH	177	67.3	67.3	100.0	HIGH	222	81.0	81.0	100.0
Total	263	100.0	100.0		Total	274	100.0	100.0	

Digital: Attitudes Pre and Post									
	Frequency	Percentage	Percentage Valid	Accumulated		Frequency	Percentage	Percentage Valid	Accumulated
LOW	1	.4	.4	.4	LOW	1	.4	.4	.4
MEDIUM	56	21.3	21.3	21.7	MEDIUM	46	16.8	16.8	17.2
HIGH	206	78.3	78.3	100.0	HIGH	227	82.8	82.8	100.0
Total	263	100.0	100.0		Total	274	100.0	100.0	

Table 3: Sustainability competencies

Sustainability: Skills Pre and Post									
	Frequency	Percent	Valid Percentage	Accumulated		Frequency	Percent	Valid Percentage	Accumulated
LOW	2	.8	.8	.8	LOW	2	.7	.7	.7
MEDIUM	75	28.5	28.5	29.3	MEDIUM	43	15.7	15.7	16.4
HIGH	186	70.7	70.7	100.0	HIGH	229	83.6	83.6	100.0
Total	263	100.0	100.0		Total	274	100.0	100.0	
Sustainability: Attitudes Pre and Post									
	Frequency	Percentage	Valid Percentage	Accumulated		Frequency	Percentage	Valid Percentage	Accumulated
MEDIUM	16	6.1	6.1	6.1	LOW	4	1.5	1.5	1.5
HIGH	247	93.9	93.9	100.0	MEDIUM	17	6.2	6.2	7.7
Total	263	100.0	100.0		HIGH	253	92.3	92.3	100.0
					Total	274	100.0	100.0	
Sustainability Knowledge Pre and post									
	Frequency	Percentage	Valid Percentage	Accumulated		Frequency	Percentage	Valid Percentage	Accumulated
LOW	1	.4	.4	.4	LOW	1	.4	.4	.4
MEDIUM	72	27.4	27.4	27.8	MEDIUM	9	3.3	3.3	3.6
HIGH	190	72.2	72.2	100.0	HIGH	264	96.4	96.4	100.0
Total	263	100.0	100.0		Total	274	100.0	100.0	

All three scales were analysed for reliability using Cronbach' α . Overall Cronbach alpha values of **0.7** indicate acceptable internal consistency of all three tests. In general post GCSC data has higher scores.

- 1. Sustainability Scale reliability using Cronbach' α (Knowledge, Attitudes, Skills) pre and post VE

	α Pre	α Post	
KN	.788	.827	6
ATT	.808	.885	4
SKL	.809	.854	4

- 2. Digital collaboration Scale using Cronbach' α :

	α Pre	α Post	#Items
KN	.671	.704	3

	α Pre	α Post	#Items
ATT	.841	.878	6
SKL	.841	.878	6

- 3. Intercultural Scale using Cronbach's α :

	α Pre	α Post	#Items
KN	.780	.859	6
ATT	.497	.699	4
SKL	.741	.816	4

6. Discussion and future outlook

The global Covid crisis has had a lasting impact on many aspects of academic life and has created a sort of pressure-cooker for reform of the teaching-learning environment at HEIs. Many path-breaking developments have emerged both in relation to online teaching and international collaboration across the globe. These developments are contributing to more sustainable teaching and learning practices. The importance and frequency virtual work in global virtual teams has also gained traction recently and virtual work structures have been recognized as a "lifebuoy for many struggling businesses" (Bekirogullari and Thambusamy, 2020, p.3217).

While HEIs are attaching increasing importance to the idea of building students' global competency (Deardorff and Arasaratnam-Smith, 2017), they have not yet effectively integrated the concept of sustainability thinking and sustainability competence. This is one of the factors contributing to the uniqueness of the Global Case Study Challenge, as a forward-thinking program for the development of global work competencies. Results show a consistent increase of competencies over time among all the program participants. As regards future outlook, the GCSC is currently being intentionally re-visioned as an experiential professional development (EPD) opportunity for educators, including peer-learning and networking opportunities, global educator laboratories, co-grading conferences and digital facilitation as part of the global virtual conference, this provides a host of opportunities for future research on educator learning development within the GCSC. Of particular interest, is undoubtedly the aspect of collaborative grading across different educational and country contexts, as well as the development of learning design and facilitation in the virtual space and as part of internationalization processes.

It became evident after the first two iterations that the GVTs needed more time and structure in creating a trust-building environment to generate a sense of team spirit and enhance teamwork. Hence, targeted virtual team-building activities were built into the GCSC design and included also as part of the assessment criteria. This aspect of team and leadership dynamics in virtual teams provides an interesting opportunity for future research. Teaching methods, educator professional development, and learning analytics and evaluation in online learning environments all remain under researched. These represent key aspects of virtual learning and teaching that are urgently needed to help equip students with essential global work competencies and leverage their potential to become effective professionals in high-performing Global Virtual Teams.

There is a clear need to further evaluate the GCSC proposed GloW competencies to develop a more detailed competence framework for effective work in conscious and sustainable Global Virtual Teams. The current results point towards the GCSC as an effective lab for developing these intercultural, digital communication and sustainability competencies, all of which are increasingly important in the move towards more virtual, flexible and responsible (in the context of conscious sustainability) working and living environments.

7. Conclusion

In the first two iterations of the Global Case Study Challenge, the success of the program was measured using qualitative structured reflections. In the third and fourth additions, a mixed research approach was taken, measuring competency development via qualitative reflections and longitudinal surveying of intercultural, digital communication and (in 2021) sustainability competencies. This paper presents the longitudinal data gathered from the 2021 Global Case Study Challenge and clearly demonstrates that the GCSC as a virtual exchange developing global work competencies is working. The results present clear evidence of a teaching and learning methodology that contributes to the development of global work competencies over a two-month period. In this field of research, a gap remains as to the measurement and structured reflection of competency

development for effective work and collaboration in GVTs. No comprehensive holistic model exists to meet these ends, but the GCSC's GloW model discussed here goes some way towards closing this gap.

The research presented here on global work competency development has several limitations. A clear limitation is evident in the fact that self-assessed questionnaires were used, here there is some risk that respondents either overestimate or underestimate their own competencies. The authors are conscious of this limitation. Future work in this field should include additional instruments to go beyond self-assessment. A further limitation of this research could be seen in the use of the A.S.K.S. Intercultural Knowledge and Competence Survey, which has not been developed specifically for use in virtual intercultural communication and collaboration. An alternative scale could be used here to specifically factor in the virtual dimension and its impact on intercultural attitudes, knowledge, and skills. Despite these limitation, researchers, instructional designers and educators should find the method and learning design presented here valuable and transferable.

To conclude, the GloW model can be considered as a ground-breaking new competency model for global work and work in virtual teams, combining not only key intercultural and digital communication competencies but also embedding future-oriented sustainability competencies in its design. The Global Case Study Challenge as a VE program clearly proves that it contributes to HEI students' development of these key competencies. The GloW model, the GCSC learning architecture, and the quantitative research findings presented here provide a solid foundation for future research. The increasing digitalization of both 'worksapes' and 'eduscapes' (the world of work and Higher Education), support the urgency and necessity for continued research, dialogue, and debate in validating the set of Global Work competencies proposed here. This goes hand in hand with a need for further research to identify effective strategies for teaching these competencies effectively in collaborative, international and digital educational environments.

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