

**Co-creation in Higher Education:
A comparison of Italian and US university students' perception of learning modes**
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Introduction and Objectives

COVID-19 has forced schools and universities to learn from new realities and adapt quickly to change by moving from face-to-face (F2F) to online teaching. The pandemic has greatly influenced digitization and teaching practices in higher education all over the world, of course with varying intensity depending on the cultural context of the country.

Online teaching is not a new issue in higher education (Martin et al., 2020), but prior to COVID-19 the use of digital technologies for educational purposes was limited to certain online education providers (e.g., online universities, or distance education/ online programs) and/or to certain geographical areas - including emerging countries (Caridà et al., 2009) - and occasionally to traditional universities offering only a few courses and some specific activities (e.g., seminars).

The mandatory closure of universities and schools worldwide (Unesco 2020) to provide F2F learning, and the accompanying digitization of teaching have created a new system of higher education in which rules, practices and institutional arrangements suddenly seem inadequate to ensure the creation and dissemination of value.

The shift to virtual learning has forced faculty to adapt their teaching strategies and themselves to the new educational scenario in order to deliver educational content through mainly the use of video conferencing platforms (such as Zoom, Google Meet, Microsoft Teams, etc.) along with the college-specific e-learning platforms (such as Moodle, Ilias, Olat). Teachers were forced to redesign courses and activities to ensure the motivation and rhythm of the lessons to remain somewhat the same to prevent the lack of concentration and interaction with and among students in the classroom that sometimes occur with online modes (Gonçalves et al., 2020).

It is well known that video conferencing platforms and the Internet ecosystem enable the convergence of many learning elements (e.g., text, audio, and video) in the same communication channel (Zhu et al., 2020), and according to some studies (Mukhtar, 2020), they can facilitate the online learning process by making teaching more dynamic, interactive, and effective (Caridà et al., 2021).

Of course, the success of online and distance education depends on several factors that shape the new educational context. For example, the role of the professor as a facilitator of learning (e.g., facilitator, participant, and observer), the degree of student autonomy (Cebi et al., 2020) that affects the level of interaction with the professor and fellow students, and the new teaching format that must address the new and specific needs of students in this difficult and challenging time.

In the field of marketing research, social interaction through technology enables the widespread application of value co-creation methods and tools (Lusch and Nambisan, 2015; Schau et al., 2009; Carida' et al., 2015, 2017; Shaman, et al. 2017).

Resource integration (Kleinaltenkamp et al., 2012; Peters et al., 2014), which is a prerequisite and fundamental requirement for shared value creation, refers to methods that actors use to integrate resources in collaborative processes that lead to experience-based outcomes and mutual benefits (Edvardsson et al., 2014).

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The aim of this article is to investigate whether technology can enable practices of resource integration - and thus value creation processes - in online/distance learning. More specifically, by adopting a framework that takes into account the main factors/resources identified in the literature as influencing the success of educational programs, we aim to analyze how students interact and combine resources and identify and interpret the values they co-create within and through the social context. The study benefits from an international comparison that shows whether the new RI teaching methods differ between students in Italy versus the United States. The remainder of the article is as follows: The next section deals with the theoretical framework. Then we present the research method and discuss the main results.

Theoretical framework

Resource Integration and value co-creation

According to Service-Dominant (S-D) logic, RI is the core process of value co-creation that takes place in a social context (Vargo and Lusch, 2008; Peters, 2014). Resource integration depends on the interaction between actors (Caridà et al., 2019). RI is the process by which actors involved in a relationship (exchange) deploy resources when they undertake bundles of activities that directly create value or facilitate subsequent consumption/use from which they derive value (Hibbert et al. 2012). Successful RI requires resourcefulness (i.e., actors' awareness of the potential resources available to them): Koskela-Huotari and Vargo, 2016) and ongoing interaction and collaboration between actors (Mele et al., 2010). Both the resourcefulness and interaction enable actors to access additional and potential resources and transform them into valuable resources through integration (Colurcio et al., forthcoming).

This is consistent with the dynamic nature of resources (Edvardsson et al., 2014; Zimmermann, 1951), for which both operand and operant resources (things, people, machines, money, institutions or concepts) have only potential value until they are used.

Therefore, potential resources become valuable when they are used through integration with other potential resources.

RI is not an automatic sequence of phases; it is a process with interdependent phases that require adaptation to institutions and institutional arrangements that facilitate or hinder RI. They serve as the rules, norms, and values that define the rules of the game (Frow et al., 2019) and guide actors' actions and interactions for performance exchange and value determination (Edvardsson et al., 2011). Institutions are deeply rooted in the social system and social structures, expressing social norms and acting as a basic infrastructure to coordinate cooperation and make the social context understandable and meaningful (Vargo and Lusch, 2016).

Education: methods and techniques

There is ample evidence of the explosive growth of online teaching/learning during the pandemic COVID-19 and of its key role in higher education in the immediate future as well. Since the 1990s, research in distance education has focused primarily on the characteristics of learners and their interaction in courses, and on course design and the characteristics of instructors. These two topics define elements that influence strategies to increase interaction with others, especially peers and instructors (Cho et al., 2013), as well as active learning (Berge et al., 2013).

According to Martin et al., (2020), learner characteristics refer to demographic, academic, cognitive, affective, self-regulatory, and motivational characteristics of online students. For example, studies on online learning found a strong and positive relationship between learner self-regulation and autonomy with communication and collaboration (Barnard et al., 2009) and active interaction with others (Mukhtar et al., 2020). Self-regulation (or self-regulated learning) refers

to students who are able to self-generate thought and learning by creating productive social relationships and work environments rather than being passive recipients of information (Schunk and Zimmerman, 2012).

Therefore, understanding learners' characteristics is critical to the success and quality of the course as it is closely related to course design issues and different ways of engaging learners to better meet their needs. Course design and development depends on the availability and use of digital learning technologies (e.g., social connection platforms, chat - chat room, videos, discussion forums, etc.). The characteristics and roles of the instructor in the online classroom, are critical to promote learners' interaction with others (Mullen et al., 2006; Ryan and Patrick, 2001), and the pedagogical techniques (group and individual work, small and large group discussions, role-playing, case study analysis and discussion, etc.) to engage online learners and build a sense of community, are the main factors that characterize the course design and development.

In the virtual classroom, the teacher's role shifts from instructive to supportive and facilitative (Patak et al., 2016); the teacher acts as a connector to build relationships between learners and help them collaborate despite the physical distance. Different roles the teachers play, and the different course designs allow for different types of engagement which are crucial to communicate and interact with learners (e.g., learner-teacher interaction), to stimulate their participation/involvement and collaboration (e.g., learner-learner/ peer interactions) (Phirangee et al., 2016), and to encourage student's presence in online courses (Phirangee and Malec, 2017).

Interaction, collaboration, and students' continuous presence in online courses are some predictors of successful online course experiences. According to the above considerations, online teaching could enable resource integration processes (between students and teachers and between peers).

Method

Data Collection and Sample

A self-administered questionnaire was designed in Qualtrics (For US) and SurveyMonkey (for Italy) and distributed online to undergraduate (and graduate?) students in Italy and the United States, during May and June 2021.

The Italian sample consisted of 262 students, 64 percent female, 17 percent 18-20 years old, 47 percent 21-24 years old and 36 percent over 24 years old. Eightyfour percent were full time students, 12 percent were part-time students, 7.5 percent worked less than 40 hrs per week, and 6.4 percent worked 40 hours or more. The majority were business students and 47.5 were undergraduate students and 48.7 were graduate level students, 3.7 percent were postgraduate level. Ninety-six percent were enrolled in traditional degree programs, while 4 percent were in online programs. Eightyseven percent had not attended online classes pre Covid-19 pandemic, 0.4 percent had attended hybrid classes, and 12.7 percent had attended online classes prior to the pandemic. During spring 2021 semester 52.4 percent spent more than 7 hours per week attending online classes, 25.5 percent between 5-6 hours, 9.7 percent 3-4 hours, and 4.5 percent less than 2 hours, while 8 percent didn't attend any online classes.

The US sample consisted of 268 students, 56 percent female, 32 percent 18-20 years old, 59 percent 21-24 years old and 9 percent over 24 years old. Eighty seven percent were full time students, 6 percent worked less than 40 hrs per week, and 4.5 percent worked 40 hours or more. The majority were business students at the undergraduate level, 98 percent. Ninety-three percent were enrolled in traditional degree programs, while 7 percent were in online programs. Fifty-four percent had attended online classes pre Covid-19 pandemic, 15.4 percent had attended hybrid classes, and 30.5 percent had not attended any online classes prior to the pandemic. During

spring 2021 semester 34.2 percent spent more than 7 hours per week attending online classes, 30 percent between 5-6 hours, 24 percent 3-4 hours, and 8 percent less than 2 hours.

Measurements and Reliability Analysis

Six items measured peer interaction, Cronbach's alpha=0.703. Three items focused on F2F interaction Cronbach's alpha = 0.766, and three on online interaction Cronbach's alpha = 0.724. The same items were adapted to measure instructor interaction with a focus on knowledge sharing with an overall Cronbach's alpha = 0.801, broken up to three F2F items, Cronbach's alpha = 0.872, and online Cronbach's alpha = 0.907. The interaction and knowledge sharing items were adapted from Shaman, et al.'s (2017) customer value co-creation attitude scale. Ten items measured course design, Cronbach's alpha = 0.751, broken up into F2F, Cronbach's alpha = 0.651 and online = 0.629 which is a bit on the lower side, but still acceptable (De Vellis, 1991). Our dependent variable, learning outcomes was measured with eight items, Cronbach's alpha = 0.843, with two subdimensions Learning, three items, Cronbach's alpha = 0.775, and Involvement measured with five items, Cronbach's alpha = 0.787. See Appendix A for all measurement items.

Findings

We estimated the following linear multiple regression models for the two country groups:

(1)

$$Outcome = \alpha + \beta_1 Peer Interaction F2F + \beta_2 Peer Interaction Online + \beta_3 Instructor Interaction F2F + \beta_4 Instructor Interaction Online$$

(2)

$$Learning = \alpha + \beta_1 Peer Interaction F2F + \beta_2 Peer Interaction Online + \beta_3 Instructor Interaction F2F + \beta_4 Instructor Interaction Online$$

(3)

$$Involvement = \alpha + \beta_1 Peer Interaction F2F + \beta_2 Peer Interaction Online + \beta_3 Instructor Interaction F2F + \beta_4 Instructor Interaction Online$$

Table 1 shows the regression coefficients and their significance.

Table 1 – Regression coefficients and significance

Response variable	Outcome (1)		Learning (2)		Involvement (3)	
	IT	US	IT	US	IT	US
Peer Interaction F2F	0.2305282***	0.2471923***	0.3110549***	0.3891289***	0.1823547***	0.1619296***
Peer Interaction Online	0.0466418	-0.0199066	0.1489829***	0.0335	-0.0147421	-0.0516798
Instructor Interaction F2F	0.2464191***	0.3238219***	0.3226826***	0.292064***	0.2006617***	0.343429***
Instructor Interaction Online	0.1175569**	-0.0127497	-0.0059409	-0.0823457	0.1920794***	0.0289767
Course Design F2F	0.0550156	0.2021797***	-0.0261345	0.1458235**	0.1042258*	0.2356231***
Course Design Online	0.0547143	0.1653488***	0.0714421	0.1534368**	0.0440513	0.172577***
Constant	1.515283***	0.495841*	0.9740211**	0.3642343	1.834276***	0.5688582**
R-squared	0.4042	0.6446	0.4097	0.5336	0.344	0.5876

*Significant at 10%
**Significant at 5%
***Significant at 1%

Looking at the results of the model (1) we can see that Peer Interaction F2F is always significant, instead Peer Interaction Online is not significant, for both Italian and US students. Instructor Interaction F2F is significant for both Italian and US students, instead Instructor Interaction Online is significant for Italians, but it is not significant for US students. The most interesting result refers to the Course Design; as we can see both, F2F and Online are not significant for Italian students, but they are significant for US students. This result might be due to the huge difference in experience of taking online classes between the two groups.

In models (2) and (3) we decomposed the response (outcome) variable into learning and involvement. The main difference between model (2) and model (1) is that Peer Interaction Online becomes significant for Italian students, and Instructor Interaction Online becomes non-significant for Italian students. No changes for the US group. Comparing model (3) to model (1), we find no differences for the US sample, instead, for the Italian sample, Course Design F2F becomes significant.

Discussion and Conclusion

Implications

The results show that resource integration does not occur in the online learning environment.

Even with some differences between the Italian and the American sample, interaction, the first form of resource integration, is generally not enabled by the online mode (Caridà et al., 2019). Students' perceptions show that awareness of potential interaction and resource integration is not present (Koskela-Huotari and Vargo, 2016).

Implications for higher education instructors is that US students value F2F interactions with peers more than online interactions. Italian students found value in online peer interactions, which could possibly be explained by the novelty in this mode for them and they may have held on to their regular level of interaction as they felt it facilitated their learning. They were willing to seek out their peers and interact with them to co-create their learning environment, while US students did not find it helpful. In addition, the online instructor interaction assisted in their overall course involvement, showing additional co-creation of value in the learning environment. Surprisingly, for the US students, F2F interaction with both peers and instructors is valued and assists in their learning and involvement outcomes. The value co-creation that takes place due to human interaction is not easily replaceable with online modes for the US students. Could it be that US instructors need to incentivize their students to engage with their peers and their instructor more than Italian instructors? 84.3 percent of Italian students, and 65.8 percent of US students believe online classes will complement F2F classes in the future; thus future research should investigate the various teaching strategies and tools that are utilized by instructors in the two countries to gain a better understanding of the differences observed in the students' learning outcomes.

Many higher education institutions (HEI), in particular in the US, are moving towards offering additional course offerings online in Distance Education programs to target students who live in remote locations or who work full time. However, our results show that traditional students value the F2F interactions which cannot be replicable online which is promising for HEI as they have felt threatened by the digitization of education (cites).

Limitations

This is a cross-sectional study using convenience samples from two countries. Data collection was conducted during a pandemic that has affected everyone's learning outcomes.

Further research

The results we presented above refer to an initial and exploratory study of value co-creation (resource integration) and learning environment. We conducted this exploratory study to identify the most important factors on the basis of which we formulate hypotheses for the development of a more in-depth study on co-creation of values and learning contexts, taking into account mediating variables such as country, learning areas, and previous experience of online learning.

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Appendix A

Measurement items:

Peer Interaction (Shamin, Ghazali, and Albinsson 2017)

PEER1 I like to interact with my peers to get information on course content, and to exchange ideas and opinions with during face-to-face courses (F2F)

PEER2 I like to interact with my peers to get information on course content, and to exchange ideas and opinions with during online courses (Online)

PEER3 I like studying and reviewing the class content with peers face-to-face (F2F)

PEER4 I like studying and reviewing the class content with peers remotely (Skype, zoom etc). (Online)

PEER5 I am interested in the views and opinions of my peers when I am attending face-to-face classes (F2F)

PEER6 I am interested in the views and opinions of my peers when I am attending online classes (Online)

Instructor Interaction (Shamin, Ghazali, and Albinsson 2017)

INSTR1 I like to interact with my instructors to share information during face-to-face classes (F2F)

INSTR2 I like to interact with my instructors to share information during online classes (Online)

INSTR3 I like to engage in dialogue for knowledge sharing (e.g. share my opinion/feedback) when my instructors take initiatives during face-to-face classes (F2F)

INSTR4 I like to engage in dialogue for knowledge sharing (e.g. share my opinion/feedback) when my instructors take initiatives during online classes (Online)

INSTR5 I like to share knowledge with the instructor on the topics addressed during face-to-face classes (F2F)

INSTR6 I like to share knowledge with the instructor on the topics addressed during online classes (Online)

Course Design

DESIGN1 The face-to-face classes I attend include periodic tests and graded assignments (F2F)

DESIGN2 The online classes I attend include periodic tests and graded assignments (online)

DESIGN3 During the face-to-face classes the instructor shows video and/ or slides (F2F)

DESIGN4 During the face-to-face classes the instructor uses polls/ quizzes (F2F)

DESIGN5 During the face-to-face classes the instructor uses practical cases (F2F)

DESIGN6 During the face-to-face classes the instructor offers seminars with experts or guest speakers (F2F)

DESIGN7 During the online classes the instructor shows video and/ or slides (Online)

DESIGN8 During the online classes the instructor uses polls/ quizzes (Online)

DESIGN9 During the online classes the instructor uses practical cases (Online)

DESIGN10 During the online classes the instructor offer seminars with experts or guest speakers (Online)

Learning Outcomes

Learning

LEARN1 Studying and reviewing the class with peers improves my learning

LEARN2 Exchanging in-depth materials with my peers on the topics addressed during the classes improves my learning

LEARN3 Sharing in-depth information with the instructor on the topics addressed during the classes improves my learning

Involvement

INVOL1 Exchanging ideas and opinions with colleagues on the topics addressed during face-to-face classes increases my involvement

INVOL2 Expressing my opinion/feedback, when the instructor requests it, increases my involvement

INVOL3 When the instructor stimulates my participation I feel more involved

INVOL4 Courses that include periodic tests and graded assignment improve my involvement

INVOL5 When the instructor presents videos, slides, polls, practical cases, discussions, and/or seminars with experts I feel more involved