

## Cultural and individual characteristics in adopting computer-supported collaborative learning during covid-19 outbreak: Willingness or obligatory to accept technology?

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### ABSTRACT

With the prevalence of Covid 19, collaborative learning (CL) with the guide of advanced digital learning innovation has become progressively dominant in an assortment of instructional settings making the role of the lecturer more demanding in managing the classroom. In any case, notwithstanding a solid hypothetical and exploration premise, CL has been scrutinized for being excessively applied to all learning circumstances and student types but largely ignored management aspects that lecturers lack guidance and support in dealing with learner behavior. This study investigates the impacts of extroversion/ introversion character qualities and collectivism/individualism convictions on students' collaborative learning preferences. The empirical data consisting of 170 valid datasets were collected from undergraduate students after attending computer-supported collaborative learning of Edmodo and Google Meet. The relationship among construct was assessed with Structural Equation Modeling (SEM). The assessment of information demonstrated that student perceptions of computer-supported collaborative learning have a positive association with students' personality and cultural beliefs. This finding brings the implication that although collaborative learning through a digital platform is compulsory during the pandemic, extroversion/introversion on students' attitudes and students' cultural beliefs should be considered to ensure the effectiveness of instructions.

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## 1. Introduction

Currently, experts in educational administration are keen on supporting learners' 21st-century abilities by exploring all approaches to accomplish the learning results comprising the new collaborative learning - a principle of educating and learning systems to advance learners' coordinating effort in a small group to upgrade their own and each other's learning (Le et al., 2018). With the aid of technology, collaborative learning metamorphoses as a tool of learning and instruction to create an environment of learning by applying various technological and pedagogical strategies (Jeong et al., 2019) and it has become more popular during the COVID 19 outbreak for most universities in Asia have decided to stop classical face to face interaction teaching-and-learning strategies (Huang, 2020). University lecturers have three outstanding obligations concerning collaborative learning ventures: shaping the groups, preparing their learners to be gainful supporters and partners, and overseeing shared meetings (Zaky, 2018). However, putting learners in a small group and allotting group assignments do not ensure that they act adequately during the learning (Le et al., 2018) as in collaborative learning, the conduct, and the learning designs are considerably more unpredictable than that of individual learning. Besides, lecturers must be acquainted with the current online teaching platforms, fine-tune their syllabi, instructional approach, and adjust to the new circumstances, making many university lecturers find it difficult to adopt computer-supported collaborative learning (Pretorius et al., 2019).

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The quality of learning is controlled by two broad factors: the learners' attributes and the learning condition, which is impacted by the way of life of a society (Lally et al., 2018). Given culture's effect on the cognitive development, cultural uniqueness, and practices are molded in learners and it can be utilized to enhance academic skill in classroom (Kaur, 2017). Early work in the structure of character rotated around endeavors to recognize and name distinctive attributes that portray a person's conduct. These attributes, when they are displayed in an enormous number of circumstances, are called personality traits (McCrae, 2009). Although learning approaches are seen as considerably more logical than personality traits, lately, specialists have endeavored to evaluate how much proportion of learning approaches and personality surveying are irrelevant, related, comparable, or similar (Backman et al., 2019). As a newly developed country, Indonesia is technologically adept and ready to welcome a new trend in teaching-and-learning mode. However, the significant adoption of computer-supported collaborative learning in the country has not been recognized to the level and impact similar to developed countries. One of the crucial reasons that computer-supported collaborative learning has not been widely accommodated in Indonesia is the inadequacy of sufficient examinations aimed at figuring out what variables drive and impact users' behavior towards the application of computer-supported collaborative learning (Sarbaini et al., 2019). Various researchers have acknowledged the importance of culture in embracing innovation in higher education setting (McKellar, 2020; Rajiani & Ismail, 2019). However, to our knowledge, almost no consideration has been allocated to examine the influence of culture on behavioral inclination to adopt computer-supported collaborative learning. This study views the shortcomings of study in current literature and lack of information on this matter. Thus, this empirical analysis intends to fill the knowledge gap by examining the impact of individualism-collectivism and extraversion-introversion on the adoption of computer-supported collaborative learning in a newly developed country context of Indonesia.

## 2. Literature Review

### 2.1 Collaborative learning

Collaborative learning (CL) is a sort of social activities, including a network of students and educators, where individuals share and gain information. All through the latest decades, CL has been considered as methods for propelling scholastic and social instructive results (Zhang et al., 2019). Be that as it may, research additionally indicates that the utilization of CL in advanced education is not generally fruitful in daily classroom interaction as a few administrative issues are common (Hakkinen et al., 2017). When observing the viability of CL, scholars have noted difficulties that learners experience, for example, inconsistent individual involvement in class discussion (Gillies, 2019), and learners' absence of informative and collaborative capabilities (Kim and Ketenci, 2019). Additionally, teachers likewise experience administrative difficulties (Cantabella et al., 2018), and hard to observe the benefit of collaborative undertaking (Loh & Teo, 2016). In Indonesia, the ebb and flow examination into CL and adult learning are increasingly centered around the parts of electronic and web-based learning (Sarbaini et al., 2019), connection among CL and the students (Retnowati et al., 2018) without explicitly look at the administration viewpoints (Fajar et al., 2018) and individual conduct (Yusra et al., 2019). Long before the Covid 19 breakout, the main challenge of computer-aided-learning in Indonesia is the blatant gap between technology and human interaction (Harlie et al., 2019). Thus, the learners' positive attitude to shift from classical teaching-and-learning into computer-supported collaborative learning is the key to achieving instructional objective.

### 2.2 Personality Traits & Collaborative Learning

Two of the most dissected elements of personality that affectively affect learning are extroversion-introversion and risk-taking (Gambetti & Giusberti, 2019). Risk-takers; who are accepted to be naturally social butterflies are bound to change and increasingly impervious to fossilization that they are bound to partake in community-oriented learning. Extroverts, who will, in general, be friendly, are bound to join gatherings, increasingly slanted to participate in discussions both inside and outside the study hall (Smiderle et al., 2020).

### 2.3. Cultural Value & Collaborative Learning

The component of culture assumes a significant contribution to adult learning (Norris & Murphy, 2020) as it has the ability to impact the students' learning styles inside the collectivist nation setting (Nurumal et al., 2019). Also, culture and CL are crucial to adult learning and as per Popov et al., (2019) culture can mold the development of CL among grown-up students. The component of culture assumes a significant contribution to adult learning (Norris & Murphy, 2020) as it has the ability to impact the students' learning styles inside the collectivist nation setting (Nurumal et al., 2019), Also, culture and CL are crucial to adult learning as culture can mold the development of CL among adult learners (Popov et al., 2019). Since collectivism vs. individualism is the principle distinction between the West and the East in decision making (Rajiani and Kot, 2018), current findings (Mishra, 2019; Mehta et al., 2019; Jonbokeva, 2020) recommend that more exploration on cross-cultural aspects of self-directed learning should be undertaken in the collectivist country.

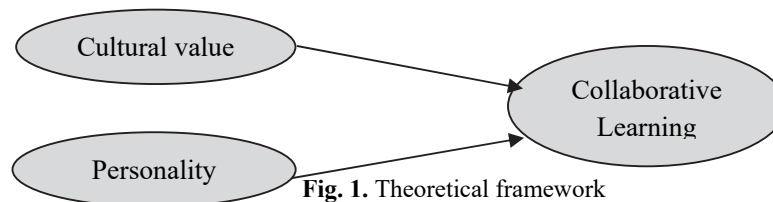
### 2.4 Technology Acceptance in Computer Supported Collaborative learning

Computer-Supported Collaborative Learning (CSCL) is based on the reason that collective information development and critical thinking can be successfully assisted with technological innovation (Jeong et al., 2019).

Various assortments of devices extending from discussion boards to simulations, wikis to robots, have been utilized to support collaborative learning (Le et al., 2018). The recent endorsement of digital technologies makes the utilization of those devices even more perilous. However, researchers now connect learning to the process of partaking in the practice of cultural impact in these systems instead of having familiarity or abilities (Alsalm, 2020). This implies that the very basic notion of learning is closely related to the contexts within which it is happening and may be different across cultural and historical perspectives. Within the university setting, numerous scholars measure usage behavior by utilizing the unified theory of acceptance and use of technology (UTAUT) model as the deciding viewpoint with respect to the user's acceptance of technology (Garone et al., 2019). For this reason, the writers applied UTAUT in the model of acceptance of computer-supported collaborative learning. Thus, based on this theory, the eagerness of students to participate in computer-supported collaborative learning is determined by performance expectancy, effort expectancy, social influence, and facilitating conditions. Performance expectancy is the degree to which an individual believes that using the system will help him or her attain gains in job performance. Effort expectancy is the degree of ease associated with the use of the system. Social influence is the degree to which an individual perceives that others believe he or she should use the new system. Facilitating conditions is the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system (Harlie et al., 2019).

### 3. Methodology

By applying purposive sampling, an explicitly planned survey was administered to one hundred and seventy (170) second-year students from University of Lambung Mangkurat Banjarmasin Indonesia majoring in Citizenship Education. The reasons of selecting respondents from this department is that they are from lower income family and they are not well acquainted with the use of the technology. Students have experienced computer-supported collaborative learning through Edmodo and Google Meet. Students' personality trait of extroversion/ introversion was estimated utilizing a 10-item test of Myers-Briggs Type Inventory – MBTI. The extroversion is labeled initiating (P1), expressive (P2), gregarious (P3), active (P4), and enthusiastic (P5) whereas the introversion is named receiving (P6), contained (P7), intimate (P8), reflective (P9), and quiet (P10). High scores in each measurement demonstrate they have a place with extroversion or introversion (Sample, 2017). Cultural beliefs of collectivism/individualism were estimated utilizing a 6-item Hofstede's national-culture (Minkov, 2018). The items are labeled as self-interest (C1), togetherness (C2), group-welfare (C3), group success (C4), individual goals (C5), group loyalty (C6). For every item, respondents were mentioned to express their degree of concession to a point scale from 1, do not agree, to 7, strongly agree. High scores demonstrate a progressively collectivistic conviction. Students' group learning inclination toward computer-supported collaborative learning was estimated by utilizing performance expectancy (L1), effort expectancy, (L2), social influence (L3) and facilitating conditions (L4) adapted from a similar study conducted in Indonesia (Sidik, & Syafar, 2020; Zafar & Meenakshi, 2012). Path analysis was used to measure the relationship. The theoretical model of the research is summed up as follows:



The proposed study of this paper considers the following two hypotheses

1. The higher the degree of collectivism, the higher the tendency to participate in collaborative learning.
2. The higher the degree of extroversion, the higher the tendency to participate in collaborative learning.

### 4. Results and discussion

The Cronbach alpha coefficients for the instrument surpass 0.60, which is the threshold for accepted reliability (Estiasari et al., 2019). Observing the mean score of respondents' personality = 14.02 (out of 10 – 18), the respondents for this research is considered in the middle of an introvert and extrovert. The mean score of cultural value: 27 (out of 14 – 40) indicates the tendency of the respondents is in collectivist types. The high mean score for collaborative learning: 17.6 (out of 8 – 21) obviously denotes the acceptance of the technology used. Factors loading are employed to evaluate discriminant validity where only items with factors loading surpass 0.50 will stay in the model (Hair et al., 2020). Fig. 1 displays that the factors loading generated all exceeded 0.50 denoting that the instrument had satisfactory convergent validity. SEM needs small value for Chi-square statistic ( $\chi^2$ ) and probability (P) smaller than 0.05 and other alternative measurements to evaluate the model fit (Shipley & Douma, 2020). By referring to the  $\chi^2$  test ( $\chi^2 = 11.863$ ) and probability (P = 0.15), this model meets goodness-of-fit of the model. Also, when examined from other measurement, the model indicates an appropriate fitness: CMIN/DF = 1.347 (expected smaller than 2), GFI = 0.963 (higher than 0.90), AGFI = 0.978 (higher than 0.90), CFI = 0.985 (higher than 0.95), TLI = 0.9721 (higher than 0.95), RMSEA = 0.07 (higher than 0.06). The summary result of structural equation modeling based on Fig. 2 is presented in Table 3.

**Table 1**  
Reliability of items

No.	Extroversion/ introversion	Cronbach alpha
1	I am viewed as "friendly" or as a "social butterfly."	0.87
2	I feel good at gatherings and like working in them.	0.82
3	I have a broad scope of companions and know bunches of individuals.	0.85
4	I sometimes hop excessively into an activity and a movement and do not provide sufficient opportunity to consider it thoroughly.	0.88
5	Before I start a venture, I neglect to stop and get clear on what I need to do and why.	0.76
6	I am viewed as "intelligent" or "reserved."	0.77
7	I feel good being distant from everyone else and like things I can do all alone.	0.75
8	I like to be close to only a couple of individuals.	0.84
9	I occasionally invest an excess of energy reflecting and do not move rapidly enough.	0.80
10	I neglect to check with the outside world to reflect whether my thoughts truly fit the experience.	0.88
<b>Individualism/ collectivism</b>		
1	Individuals should sacrifice self-interest for the group.	0.82
2	Individuals should stick with the group even through difficulties.	0.85
3	Group welfare is more important than individual rewards.	0.77
4	Group success is more important than individual success.	0.74
5	Individuals should only pursue their goals after considering the welfare of the group.	0.85
6	Group loyalty should be encouraged even if individual goals suffer.	0.81
<b>Computer supported collaborative learning</b>		
1	I expect that computer supported collaborative learning technology will be useful for me as a students for medium of instruction during Covid 19 outbreak.	0.74
2	I expect that computer supported collaborative learning technology will require minimum new skills.	0.71
3	I expect that computer supported collaborative learning technology will used a lot by lecturers during Covid 19 outbreak.	0.67
4	I expect that computer supported collaborative learning technology match with the current state of technology.	0.72

The mean of each variable is presented Table 2.

**Table 2**  
Variable means

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Personality	170	10	18	14.0286	1.83344
Cultural Value	170	14	40	27	4.41342
Collaborative Learning	170	8	21	17.6286	2.66034

The table indicated that all paths are significant denoting that the two hypotheses are accepted. A significant relationship was identified between personality type, cultural value and collaborative learning. This finding indicates that students with a specific personality style and a distinct cultural value lean toward computer supported collaborative learning. The critical ratio (CR) value of cultural value = 4.769 and significance of  $< 0.000$  confirm the first hypothesis that the higher the degree of collectivism, the higher the tendency of students to participate in computer supported collaborative learning. Similarly, the critical ratio (CR) of personal value = 3.502 and significance of  $< 0.000$  confirm the second hypothesis that the higher the level of extroversion, the higher the tendency of students to participate in computer supported collaborative learning. The outcomes affirm the impacts of extroversion/introversion, and students' cultural values in managing the lessons. Albeit collaborative learning picks up its fame as of late, educators must be aware that few students incline toward not to partake in group learning circumstances are because of their personality traits and cultural beliefs. This finding is of specific significance to the fields of instruction as well as management. Lecturers should know that individuals molded and raised in particular societies may impede the learning style prerequisites in another specific cultural milieu.

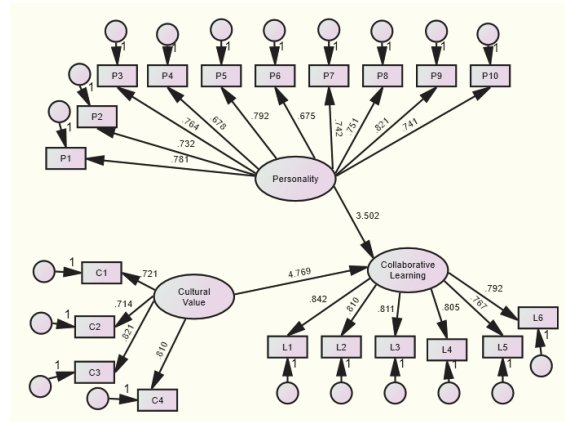
**Table 3**  
Summary of results

Constructs	Estimate	S.E.	C.R.	P	Conclusion
Collaborative Learning ← Culture	0.467	0.098	4.769	***	Significant
Collaborative Learning ← Personality	0.438	0.125	3.502	***	Significant

Notes: \*\*\* =  $p < 0.00$ .

Supporting Kaur (2017) investigating the impact of the Malay culture on self-directed learning among Malay adult students, the educator/teacher must comprehend that social elements are necessary components which may influence their conduct and classroom collaboration techniques. This assumption is applicable also for Indonesian considering the two countries possessing the cultural proximity (Rajiani & Pyplacz, 2018). Refusal to partake in the classroom exercises or modesty when requested to contribute in a conversation ought not to be summed up as having restricted topic capability or inability to use the technology. Hesitance to participate in collaborative learning may originate from social factors that may impact the learners' conduct. In spite of the fact that social butterfly will take an interest in student-centered learning activities in term of collaborative learning, two focal limitations portray these learning conditions: (1) a decrease in communication with the speaker and (2) the feeling of instructor-student separation that makes extroverts lose enthusiasm for the exercise (Akhavan et al., 2016). Regardless of the weaknesses, collaborative learning with advanced innovation technology has introduced radical changes to the worldwide learning network. If carefully utilized and oversaw, it can highlight the economic, social, and environmental challenges in an ever-evolving educational landscape. Technological advances break the boundaries of the brick-

and-mortar institutional practices of rote learning and allow for a global participatory culture to emerge to consume, share, collaborate, and co-create with peers with shared academic interests. If challenges and concerns are well managed by particular reference to learners' characteristics and cultural milieu, collaborative learning can play a vital role in the right for education for all and the development of the complex skills our world demands for the 21st-century learner, professional, and citizen. This finding can be used particularly for newly developed and collectivist countries struggling to transfer the knowledge mechanism model (Arsawan et al., 2018) during the pandemic of Covid 19 where the classical model of teaching is temporarily banned.



RMSEA = 0.07 GFI = 0.963 AGFI = 0.978 CFI = 0.985 TLI = 0.972 Chi-Square = 11.863 Chi-Square/DF = 1.347 P-value = 0.15

Fig. 2. Full Model

## 5. Conclusion and recommendation

This investigation has shown that culture could be a substantial impact on the improvement of CL availability of the respondents and may influence their communication and learning systems in the classroom. Although the effect may fluctuate among learners, it cannot be denied that culture can either hinder or energize CL. In dealing with the Indonesian class setting, the lecturers need to comprehend that social components are essential components which may influence their conduct and classroom cooperation techniques. Reluctance to take part in classroom exercises or bashfulness when requested to contribute in a conversation ought not to be evaluated as having constrained topic capability or inability to use the learning technology. Hesitance to participate in a discussion may be originated from social factors that may impact the students' conduct. This research is conducted during the Covid 19 outbreak where students have to attend on-line class making the acceptance of the technology might be viewed as obligatory. Future research is encouraged to compare the result when conducted after the pandemic is over and the class sums up in blended learning mode.

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