

Social Presence Online Tutoring: A study of Peer Effect Mechanism

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ABSTRACT: *The purpose of this study is to analyze whether Social Presence has an effect on student learning completeness in distance learning? at the University of PGRI Argopuro Jember (N = 600), the assessment is measured by the average Grade Point Average (GPA). Data, obtained from variables consisting of: variable composition of students, class environment and the average value of students. Previous research has stated that Social Presence affects positive attitudes that have an impact on student learning mastery. This research found the existence of peer effect and frame factor theory. Peer effect measurements and situational analysis obtained are the same as the differences in student GPAs. The social presence variable increases performance, appreciation, and increases ability in online learning. Peer effect and frame factor theory create a close relationship with fellow students higher up. The influence of peer effect, frame factor, and social presence in relation between students is indicated by active communication, seriousness in acquiring knowledge, skills, active interaction discussing the acquired knowledge and behavior obtained from the learning environment process both virtually and in the implementation of learning.*

KEYWORDS: *Social Presence, Anxiety, Online Tutoring*

INTRODUCTION

In previous studies there were several different hypotheses about the peer effect. As explained by Schindler Rangvid (2003) combining data from the first wave of the OECD PISA sample with register data for Denmark is no peer effect. In his analysis, Schindler Rangvid showed that the positive and significant peer-level effect was strongest for weak students and continued to decline over the distribution of conditional test scores. The effect of heterogeneous peer composition on test scores did affect weak learners positively, whereas the effect for good readers was negative, but across all estimated quantiles, the effect was not significantly different from zero (Lavy & Schlosser, 2007). Similar results were presented in other studies (Hanushek et al., 2003; Wan et al., 2008), the effect sizes and types of hypotheses were empirically different mainly due to the research design, methods used and hypotheses planned. This means that the more detailed the independent variable is measured, the larger the effect size (Gustafsson et al., 2018; Sirin, 2005; van Ewijk & Slegers, 2010). Other researchers have shown that the more controls made for effects in the classroom or lecturer, the smaller the effect size (Bramoullé et al., 2020; Burke & Sass, 2013) or maybe even no effect (Vigdor & Nechyba, 2004).

For all studies there is something in common is the problem of education, which is different is that classmates influence each other, has a process of activity in science education in some studies show as early activity (Coleman, 1969) in education is rarely labeled "peer effect". This is more often

called contextual learning (Dollmann & Rudolphi, 2020; Wilkinson, 2002). In Educational Research there are important differences that need to be agreed upon in interpreting the results and how this might affect the mechanism of the peer effect (Ojo & Yemi, 2021; Osmont et al., 2021; Pedder, 2006; Shin & Chung, 2009). The cases were measured by the one-way relationship between class size and classrooms. Programs to reform teaching in large and small classes, including educational background, and parental culture. The de facto study says there is very little chance of a casual mechanism creating the peer effect. Individually how their behavior, interactions, there is a learning style with a crowd and there is an individual learning style (Bäckström, 2021), this will affect student learning (Shin & Chung, 2009). In this study, the researchers focused on the influence of peer effects, frame factors, and social presence to relate between students as indicated by the presence in active communication (Sun & Chen, 2016), earnestness in gaining knowledge, skills, active interaction discussing the knowledge gained (Isriyah et al., 2020), and behavior is obtained from the learning environment process both virtually and in the implementation of learning (Lowenthal, 2011), because exploring and how to determine how to learn virtually will contribute to future researchers.

This study found a theory of peer effect and frame factor. The results of the peer effect appear in the differences in student GPAs. Social Presence can improve performance, appreciation, and ability in online learning. Peer effect and frame factor theory create a close relationship with fellow students and higher lecturers. The influence of peer effect, frame factor, and social presence is seen in active communication relationships, seriousness in acquiring knowledge, skills, active interaction discussing knowledge and behavior obtained from the learning environment process both virtually. Exploration and how to determine how to learn virtually will contribute to future researchers. Many studies with shared focus on direct peer effects on individual outcomes, not on how likely peer effects arise from interactions between class composition, student interactions, and teacher interactions. On the other hand, this study uses the specification of frame factor theory from Ulf P. Lundgren, which focuses on the interaction between groups (virtual space) and the learning process (Rugutt & Chemosit, 2005). When providing the necessary instruction for students to study the existing curriculum, the concept was first introduced by John Carroll in his school learning model in 1963 (Carroll, 1982; Walberg et al., 1985), and further developed by Urban Dahllorf into an early version of the frame factor model (Bäckström, 2021; Haliti, 2016). There are studies on the impact of disruptive behavior in the classroom on student outcomes, there is a negative effect on disruptive behavior (Kristoffersen et al., 2015), negative impact of disruptive behavior (Lavy & Schlosser, 2007, 2011), the more the number of women the less disruptive because the correlation is less violence (Bäckström, 2021). The effect of the size of the number of women is that there are equal opportunities between boys and girls, all benefit (Bäckström, 2021).

Lundgren's (1972) frame factor theory found the effect of peer behavior. He mentions the correlation between a student's academic ability and the occurrence of disruptive behavior and how this can steal time for instruction, the theory focuses on academic skills and the time it takes students to study existing curriculum units. The existing theory is Benjamin Bloom, on learning mastery, which also comes from the Carroll school learning model, emphasizing more on how time is spent with the time that different students need to learn it in the existing curriculum. The concept of 'time-on-task' becomes significant: the more time students spend on assignments, the more they will learn. in this perspective, disrupting classroom behavior will lead to time-off-task, thereby leading to poorer outcomes for students (L. W. Anderson et al., 2001; Carroll, 1982, 1989; Coddington & Smyth, 2008; Karweit, 1983). Finally Lundgren carried out an expansion of theory with the intention of creating a broader social theory (Brody & Chamberlin, 1999) and the contributions of other parties were also very large (Bäckström, 2021), the development of theory is characterized by continuous expansion of theory (with social and historical perspectives) and with more and more frame factors. in the analysis (Rapp et al., 2017). In this study, the researcher rearranges Lundgren's original frame theory of factor theory (1972) as a way to explain the mechanisms that create multiple effects. Because the

behavior in the virtual space is distracting and steals time from learning, this aspect is included in the factor analysis framework of the peer effect mechanism. Here the researcher explores whether disruptive virtual classroom behavior affects student remote learning outcomes.

The success of the guidance process requires interaction. Interaction as a social process requires communication. Communication is built by the community in a group or individual ideas that get facilities (Motteram, 2001). Students can project themselves in guidance so that social presence and intense interactions are needed in guidance and counseling. It is explained that the online tutoring experience is a relationship of three types of presence, namely social presence, teaching presence, and cognitive presence (Akyol et al., 2009). Meanwhile, Social Presence is a medium between cognitive development and teacher presence (Garrison et al., 2010). The Social Presence mentoring pattern includes three constructs, namely affective/interaction, intense communication and cohesive (personal) response (Yildirim & Kilis, 2019).

Research on online interaction states that learning occurs when there is interaction in the three core elements, while being in a collaborative community (T. Anderson et al., 2001). Thus, students know their learning environment, are responsible and self-controlled and can diagnose positions in learning (Garrison, 2011). Important elements when interacting are Social Presence which will see the active process while learning, Cognitive development seen from the ability to construct and confirm meaning through discourse and continuous reflection (Garrison et al., 2001), and the presence of guidance related to the design and facilitation of tasks and processes that will understand cognitive better. carry on. The design and exposure of activities refers to the involvement of lecturers in designing and managing mentoring in the learning environment, for example creating a curriculum, designing or choosing a guidance method, setting a guidance schedule, using media effectively and so on. The facilities provided refer to the students' abilities. Live presentation refers to the instructor providing content and question and answer, teleconference, confirming understanding through assessment and feedback exploration, diagnosing differences and so on (T. Anderson et al., 2001). This study identifies students' perceptions of social presence and online learning. Identifying academic performance in the online learning process. Social presence stimulates them to be more interactive in online learning. So online learning requires a social presence as a measuring tool for mastery of learning. The learning effect creates a close relationship with fellow students who are higher because of the influence of the peer effect and frame factor.

Table 1. Variable in the Analysis

Variable	Category	Source
Student average	Dependent	Unipar database
The average educational background of the student before being accepted	Independent (exogenous)	Unipar database
Transfer student from another campus	Independent (exogenous)	Unipar database
Number of male students on campus	Independent (exogenous)	Unipar database
Class environment lecturer index	Independent (exogenous)	Unipar database
Class environment student index	Independent (exogenous)	Unipar database
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METHODS

To conduct the research, the researcher made a collection of scores together with the data of all students through the assessment data base. Consists of variables on course composition, disruptive class behavior and learning outcomes. All data can be accessed through the UNIPAR campus web page through the Siakad of each lecturer. Each period a survey is conducted among students, lecturers and parents of the community as part of the supervision and quality assurance of student outcomes. For four semesters (2019, 2020), a survey is conducted every one semester. The surveyed students aged 17-19 years, had an average response rate of 80% and the survey of lecturers 67%. A total of 82% of students and 78% of lecturers answered the survey (see table 2). Student and lecturer survey data have been combined with data from the data base of all grades on campus. The variables were matched with the campus code with the age level of 17-19 years and as a result, the data source was matched with the campus code used for statistics. All values are combined as presented in table 1. The way they are measured is described below, table3 presents descriptive statistics for the data set.

Table 2. Survey items and indexes from the Unipar Jember internal supervisor survey

	Survey Term and Year				Total	St Dev	Range
	Survey 2 nd Semester 20182	Survey Odd Semester 20191	Survey 2 nd Semester 20192	Survey Odd Semester 20201			
Campus Problems (a) Students	523	485	417	399	1.824		
Total	24.718	28.229	24.999	26.233	104.179		
Responses	17.172	24.242	18.432	21.422	82.678		
Responses rate (%)	70%	86%	75%	81%	79%		
Student Index:							
Virtual Environment Space	5.53	5.53	5.34	5.42	5.33	0.86	2.38-8.67
Student problems, in general	70	72	71	69	70		
Share (%)	19%	11%	12%	11%	13%		
Lecturer							
Total	11.634	13.787	11.788	11.906	49.115		
Responses	7.987	9.332	8.227	8.608	34.154	0.89	3.50-9.78
Responses rate (%)	68,7%	67,7%	69,8%	72,3%	69,5%		
Student Index:							
Virtual Environment Space	128	140	137	129	532		
Student problems, in general							
Share (%)	30%	29%	33%	32%	31%		
TERMS AND YEAR OF CLASS AND STUDENT DEMOGRAPHICS							
	Survey 2 nd 2018	Survey Odd 2019	Survey Odd 2020	TOTAL			
Educational background of students'parents	2.24	2.28	2.2	2.26	0.24	1.32-2.94	
Already working	5.0%	4.5%	8.5%	5.6%	7.2%	0-48%	
Fresh graduate	52.2%	51.5%	53.2%	52.1%	9.0%	15-91%	
Grade point average (GPA)	221.2	231.4	226.5	227.8	27.3	128-314	

The research variable is Grade-Point Average (GPA), each student can range from 0-320 points. In the grading system at Unipar, the score is given in 148 credits on a scale from A-E, where E means the student has not met the graduation criteria. E means pass with acceptable knowledge and score 10. Each step adds 10 points of value until A adds up to 40 points. Another variable taken from the SIAKAD database is the independent variable (exogenous), measuring the composition of students at the campus level. They consist of measures with parental educational background (expressed between 0-3), where 1 represents completion of compulsory assignments, senior secondary education and 3 higher education, share of male students and share of previous school origin (students under the care of their own parents and in the care of others).

Virtual rooms indicated to be disruptive (endogenous independent variables in table 1) were collected from the campus supervisory team survey and consisted of two indices, one from the student survey and one from the instructor survey. Both indices measure the virtual space environment during tutoring and are collected at the program level. Each index is calculated from three survey items. The response scale is a Likert scale, but in four steps from all three 'agree' (coded 10) to 'disagree' (coded 0), see table 2. Student and teacher index dinyatakan sebagai nilai rata-rata agregat item survey 1-3 untuk setiap program studi. Item survey Cronbach Alpha dan bagaimana indeks dihitung, are illustrated in table 2. These measures are based on very comparable definitions of disruptive behavior as described in previous studies (Granero-Gallegos et al., 2020). The missing cases are due to the campus rules for reporting results. They only report results for the index if (i) at least 65% have responded to a particular survey on campus and (ii) that at least 50% have answered the survey. The strong Cronbach's Alpha correlation is evidence of good internal validity in the index and reliability in the measurement. This conclusion is also supported by an on-campus analysis of surveys from time to time and in technical reports (Skolinspektionen, 2016).

RESULTS AND DISCUSSION

In this study, descriptive statistical analysis was carried out including correlation analysis. As mentioned earlier in the theory section endogenous factors (disruptive virtual space behavior/low social presence) are often viewed as dependent on exogenous factors. Therefore, I also perform multiple regression analysis with disturbing behavior in the virtual class (variable lecture index) as the dependent variable. And exogenous variable composition of students on campus as an explanatory

Tabel 3. Descriptive for the variables in the data set

Online Student Index	Online Guidance Environment When Giving Treatment	Online Student Index	The meaning of the numbers 1-3
Item 1	There is peace and quiet while in the virtual space so I can focus	Fully agree	10
Item 2	During guidance, the element of closeness is felt (-)	Partially agree	5.87
Item 3	My counselor ensures that there is peace and quiet during tutoring in the virtual room	Partially disagree	4.17
		Fully disagree	0
	Std. Cronbach Alpha = 0.89		
Lecture Index	Online Guidance Environment When Giving Treatment	Online Student Index	The meaning of the numbers 1-3
Item 1	Good online tutoring environment	Fully agree	10
Item 2	Maintaining order during the virtual room takes a lot of time (-)	Partially agree	5.93
Item 3	My students have peace and quiet during the virtual room	Partially disagree	4.22
		Fully disagree	0
	Std. Cronbach Alpha = 0.89		

variable. Thus the analysis shows a potential relationship between the composition of students on campus (exogenous factor) and disruptive behavior (endogenous factor) for campuses in the sample. Regarding the second research question, I performed multiple regression analysis with the Grade-Point Average (GPA) defined as the dependent variable. Since all the data is on campus, a multivariate level of regression analysis can be used (no analysis is needed because there is only one level of analysis in the data). All data preparation and analysis was performed using SAS Enterprise Guide 7.15. The main analysis was carried out in two steps using two different models. M1 and M2. In M1, the student composition variable is set as the explanatory variable, thereby determining the traditional SES model to predict student outcomes. In M2, a disruptive virtual behavior variable (Lecture Index) was added to investigate whether it added explanatory power to the analysis of the results. The results of this analysis provide a rationale for conducting a separate mediation analysis. M2 revealed a significant effect of disruptive behavior on student outcomes, at the same time as decreasing the effect of campus design composition, suggesting that some of the original campus effects are mediated through disruptive virtual space behavior.

Correlation between independent variables and outcome variables in regression: First, the analysis shows that there is a stronger correlation between the lecturer index and disruptive classroom behavior and student composition compared to the course index. For example, there is a positive correlation of 0.46 (Pearson R) between the average educational background of parents, students' school origins, and lecturers assessing the virtual classroom environment during teaching. The corresponding correlation for the student index is 0.14. Second, as expected due to the strong correlation between parents' educational background and GPA (76), there is also a positive correlation of 46 between the lecture index and GPA. The difference between index students and index lectures is strong. There is no clear answer as to why this difference in correlation exists. One explanation is that students always rate statements in survey items according to their own perceptions. What they value is calm and solitude (because the distance is difficult to monitor) in the virtual classroom so that they can focus, but they use other things for individual interests (besides learning / a lot of things to lead to low motivation). This can be judged as a disruptive environment from the lecturer's point of view. It is also important to consider the fact that lecturers assess the environment for the entire virtual classroom while students are responsible only for themselves. Regarding the first research question, it is clear that there is a correlation between student composition and disruptive virtual classroom behavior at the campus level, thereby also demonstrating a relationship between exogenous and endogenous factors.

In the presentation of multiple regression with disruptive behavior in the virtual class (lecturer index) as the dependent variable and the campus composition variable (explanatory variable). The model verifies the strong correlation between mean parental educational background, school origin and faculty index in the virtual classroom environment, even when controlling for variables for male students. Referring to the results (Lavy & Schlosser, 2007) in the study (Bäckström, 2021) analyzing disruptive classroom behavior, in his model revealed a negative effect of a larger share of boys. Controlling the background.

Behind parental education there is a negative effect of = -0.099 at $p = 0.001$. The model has F – statistic $p = < 0.0001$, R^2 adjustment is 0.22 and heteroscedasticity and linearity tests are performed (VIF = < 2.5; tolerance = > 0.2; Durbin-Watson = 1.973). Moving on to the second research question, another multiple regression analysis was established with two models. In M1, a traditional model with class size and student composition to explain the GPA variance in Siakad. A measure of disruptive classroom behavior (lecturer index) was added. The results showed that 62% variance in GPK (F-statistics at $p = < 0.0001$), with parental educational background being the strongest predictor at = 0.602 at $p = < 0.0001$. Tests were performed for heteroscedasticity and linearity (VIF = < 2.5; tolerance = > 0.2; Durbin Watson = 2.081). It was later revealed that some of the original effects, particularly of parental educational background and school origin, appeared to be mediated through disruptive

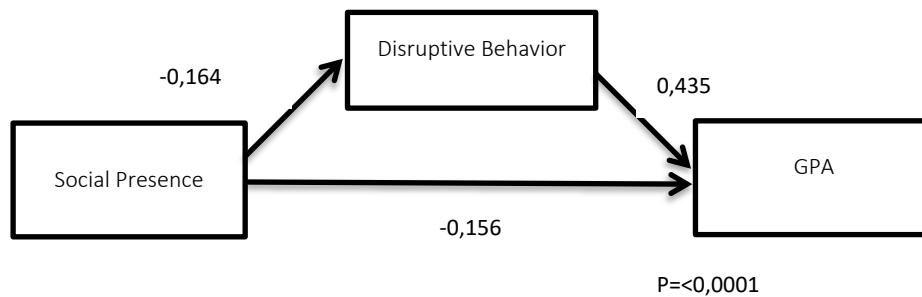


Figure 1. Mediation analysis between GPA and disruptive behavior and Social Presence

classroom behavior (lecturer index). The effect size (measured as) the share of boys reduced by 10%, educational background of parents by 8%. In addition, the lecture index seems to be a determinant of student learning outcomes on campus, besides that the lecture index also seems to be an important predictor of GPA in Siakad because the variable has almost the same effect size as boys ($\beta = 0.118$ at $p = <0.0001$). M2 63% variance in APK (F-statistics at $p = <0.0001$), compared to M1 is not a large increase (VIF = <2.5 ; tolerance = >0.2 ; Durbin Watson = 2.055).

Since M2 results show that some of the original effects of campus design composition in M1 are mediated through the occurrence of disruptive classroom behavior (lecturer index), a mediation test was conducted. In Figure 2 below, the mediation analysis of the influence of social presence is illustrated in the path diagram, the results of each separate mediation analysis are observed and presented. All mediation analyzes were tested against the conditions defined by Baron and Kenny (1986), and all of them were discussed. The Sobel test for significant mediation is presented in table 4 below. As shown in the results, some of the original effects of variable campus design composition are actually mediated through disruptive virtual classroom behavior, thus suggesting that there appears to be theoretical relevance brought by virtual classroom environments in explaining the occurrence of different peer effects.

CONCLUSIONS

If the researcher's question in this study is changed to the null hypothesis, the first null hypothesis is that there is no relationship between virtual classroom behavior disorder and the variable of school composition (social presence), and second that disruptive classroom behavior does not affect outcomes in siakad. The results show that these two null hypotheses can be rejected. There is a significant relationship between the composition of students on campus (exogenous variable) and disruptive behavior (endogenous variable). Disruptive classroom behavior also affects outcomes in siakad as measured in the GPA. These results are not replicas of Lavy and Schlosser (2007), but they do show a similar pattern. Disruptive classroom behavior does affect student grades. Similar to Lavy and Schlosser's research, this study reports a correlation between disruptive behavior and gender in school. The results of this study provide interesting input. The analysis shows that some of the original effects of student composition are, in fact, mediated through disruptive classroom behavior. This means that some of the apparent negative effects of, for example, the share of

Tabel 4. All mediation tests for campus design composition variables through classroom disruptive behavior (n = 600)

	Direct influence	Indirect influence	Total Effect	Sobel's Test (P)
GPA	-0.157	-0,072	-0.228	-0.228
Social Presence	0.681	0.681	0.681	<0.001
Parents' educational background	-0.490	-0.097	-0.586	<0.001

parental educational background on student learning outcomes, are in fact the effects of disruptive classroom behavior. As shown in table 4, the effect size (measured as d) is the educational background of parents by 8% and school origin by 4% between M1 and M2. However, the correlation between the compositional variables and disruptive behavior (as reported in table 3), suggests that increased school segregation may lead to an increase in the negative peer effect in negatively segregated schools. Therefore, overcoming disruptive behavior can be a strategy to improve learning outcomes on campus (Agasisti, Avvisati, Borgonovi, & Longobardi, 2018).

The results are not only statistically significant, but also appear to be theoretically relevant. Recalling Lundgren (1972), frame factor theory predicts that virtual classrooms due to the composition of students, they will require different amounts of teaching time to study certain curriculum units. The results of this study indicate that, in addition to the group's academic prerequisites determining the time required to achieve curriculum objectives, the classroom environment also seems important to take into account, as this would be one of several other factors creating the peer effect mechanism. The classroom environment is very important to point out that this study was not conducted using grade-level data, which limits the conclusions that may be drawn. Regarding this issue from the teacher's perspective improve interpretation. Must spend a lot of time in virtual classrooms to maintain order, activeness, length of discussion and ensure that the classroom environment is appropriate for instruction and producing assignments and time is carried out well (Anderson, 1981; Arlin, 1979). Thus disruptive virtual classroom behavior contributes to creating a larger gap between the instruction time required by the class and the actual time spent on instruction. Thus, disruptive classroom behavior is a limiting factor in the teaching process, as predicted by frame factor theory (Lundgren, 1972). The validity of this interpretation seems to be enhanced by the fact that this problem manifests and is measured in item 2 in the instructor index with the survey question "Maintaining order during class takes a lot of time from instruction" (see table 2).

It seems reasonable to assume that these disruptive behavioral effects created different effects between students with high and low social presence (Lomicka & Lord, 2007), as reported in previous studies (Schindler Rangvid, 2003). Disruptive classroom behavior is more common in low social presence classes, demanding more instructional time from students who need it most. Of course there are important limitations that must be considered in light of this interpretation of the results. One of the more important is the fact that the survey items mentioned above only measure the effect of the teacher's self-assessment from maintaining order in the virtual classroom to maintaining student social presence. Observational data may yield different findings. The results support the view that disruptive classroom behavior needs to be taken into account in estimating peer effects by increasing social presence. Since this study was conducted using data at the campus level, future research will study the actual effect on individuals in their social presence setting using microdata in a multi-level model.

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